

**Environmental Engineering Unit  
Aviation Design Division**

**Newark Liberty International Airport**

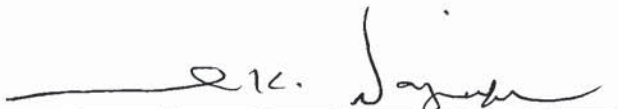
**Hangar 14**

**Supplemental Remedial Investigation**

**March 2009**

### CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

  
Signature

3-11-09  
Date

Mehry Najafi  
Print Name

Newark Airport  
Environmental Coordinator  
Title

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## **EXECUTIVE SUMMARY**

The Port Authority of NY & NJ (Port Authority) has conducted a supplemental ground water remedial investigation at Newark Liberty International Airport's (EWR) Hangar 14 to confirm the elimination of PCBs in ground water as recommended in the previously submitted Remedial Investigation/Remedial Action Selection Report.

A confirmatory round of ground water sampling was performed on all four existed monitoring wells. The results indicate that PCBs were not detected in any of the samples.

The Port Authority Environmental Engineering Unit recommends no further action in regards to ground water at EWR Hangar 14.

## **1.0 INTRODUCTION**

This supplemental remedial investigation report summarizes the confirmatory ground water investigation activities recommended in the *Remedial Investigation/Remedial Action Selection Report - Hangar 14*, September 2008, prepared by Hatch Mott MacDonald (HMM) for the Port Authority of New York and New Jersey (Port Authority).

### **1.1 Physical Setting**

#### ***1.1.1 Site Location and Description***

Hangar 14 is located in the northern corner of Newark Liberty International Airport (EWR) in the City of Newark, Essex County, New Jersey. EWR is bounded by Routes 1 & 9 to the north and west, the New Jersey Turnpike to the east, and Interchange 13A off the New Jersey Turnpike to the south and southwest. EWR is surrounded by the City of Elizabeth to the southwest, Port Elizabeth and Port Newark to the southeast and east, and the City of Newark to the north and west. The northing and easting coordinates for the center of Hangar 14 are North 681762.62 and East 581654.93, as approximated from the New Jersey Geological Survey (USGS), Elizabeth, 7.5-minute topographic quadrangle (See Figure 1).

EWR is identified as Block 5094, Lot 1 on the City of Newark tax maps, and is comprised of paved surfaces (roadways, runways and parking lots), buildings and support structures covering approximately 2,200 acres. The portion of EWR that falls within the County of Essex is under lease with the City of Newark; the remaining portion is in Union County, and is owned by the Port Authority. Current functions of the structures at EWR include passenger terminals, maintenance garages, storage areas, aircraft hangars, vehicle and aircraft maintenance facilities, aircraft fuel storage facilities, air cargo areas and ancillary facilities. Hangar 14 is situated approximately 500 feet east of Brewster Road and was constructed on a former landfill. Directly adjacent to the west and north of Hangar 14 are two hangars/maintenance buildings, which are similar in size to Hangar 14. The area adjacent to Hangar 14 to the east is covered with an impervious surface but contains no structures. To the south of Hangar 14 is a EWR taxiway. The former oil water separator system (OWSS) was located approximately 90 feet from the northeast corner and approximately 25 feet from the eastern wall of Hangar 14. This area is currently covered with an impervious surface and contains no structures. See Figure 2 for a Site Plan.

#### ***1.1.2 Geology***

Prior to the construction of the airport, the area was occupied by a salt marsh. The “bleak marshland” was progressively “reclaimed” by filling with debris and refuse. The Mosquito Control Commission was instrumental in the filling of the salt marshes. Large portions of the airport property were reportedly utilized for municipal and industrial waste disposal. Dredging spoils from the adjacent harbor were also utilized as fill.

These activities originated in the latter part of the 19<sup>th</sup> century and were continued up until the 1970s.

Historic fill varies from absent to 53 feet in thickness across the area, with an average thickness of approximately 10 feet. The fill can be divided into an upper and a lower unit. The upper unit is sandy and the lower unit is clayey. The upper fill is a combination of fill from dredging operations in the Newark Bay, “sanitary” landfill materials, historic fill from the Verrazano Bridge, and demolition debris from local construction projects. The upper fill area contains a saturated zone (the water table). The lower fill is a combination of fill from dredging operations in the Newark Bay, historic fill from the Verrazano Bridge, and demolition debris from local construction projects. The lower fill is also saturated and is a semi-confining bed thereby impeding the vertical migratory pathway of ground water and contaminants. Meadow mat is also present at approximately 10 feet below ground surface with an average thickness of approximately 5 to 10 feet.

The organic deposits are generally underlain by a medium dense, fine-grained sand or silty sand with a thickness of five feet or more. Below the sand are glacial lake deposits and bedrock. The glacial lake deposits consist of reddish-brown silts and clays, frequently varved. Bedrock is soft, red, shale, and occurs at depths ranging from 40 to 100 feet below ground surface.

The stratigraphy of the soil at Hangar 14 is moderately variable. Generally present is a surface layer of sand fill that consists of medium to fine sands, crushed glass, cinder material, wood fragments, gravel and silt. The thickness of hydraulic sand fill at the Site is 9 to 11 feet based on borings advanced during the 2005 and 2007 Building 75 subsurface investigation. A layer of organic clay underlies the historic sand fill layer.

### ***1.1.3 Hydrogeology***

There are three geologic layers that transmit water beneath the site. These ground water units in order of descending elevation are: 1) an upper, surficial aquifer, 2) a confined aquifer, and 3) a bedrock aquifer. The ground water in the upper aquifer is from infiltration of rainfall. This zone is defined by ground surface at the top to the organic/tidal marsh deposits below. The second layer that transmits ground water is the confined aquifer unit located within the glacial lake deposits. Previous field investigations conducted on behalf of the Port Authority have indicated that this unit is saline and hydraulically connected to Newark Bay. The third geologic layer that transmits ground water is the Brunswick Formation aquifer. Due to over pumping and saltwater intrusion, this aquifer is no longer used for potable supplies in this area.

Generally, the flow direction of the shallow ground water in the upper, surficial aquifer is towards Newark Bay to the east. The average calculated horizontal gradient is 0.00143 feet/feet across the Site. Based on the calculated ground water table elevations determined in this report, shallow ground water at the Site tends to flow in an east-southeast direction (See Figure 3).

#### ***1.1.4 Surface Water/Wetlands***

Hangar 14 is situated approximately 1.25 miles and 1.4 miles away from the Port Newark and Port Elizabeth channels. Both channels are southeasterly trending waterways, which are tidally influenced. The channels are connected to the Newark Bay. The Peripheral Ditch surrounds the property occupied by the Airport and is located approximately .25 miles from Hangar 14. The peripheral ditch intercepts the shallow ground water and surface water and flows south and eastward through a tidal gate at the Elizabeth channel, and into Newark Bay. Neither Newark Bay nor the peripheral ditch is used as a potable water source. No surface water bodies or wetlands are located at or adjacent to Hangar 14. Weequahic Lake is also located approximately 1.2 miles west of Hangar 14.

#### ***1.1.5 Topography***

EWR is relatively flat with a slight slope toward the Newark and Elizabeth Channels. EWR is predominantly covered with concrete or asphalt. The elevation of the site is approximately 10 feet above mean sea level. All surficial drainage is directed toward storm drains located along the streets throughout EWR. The topography at Hangar 14 contains the same conditions as those noted for EWR.

### **1.2 Site History**

Hangar 14 is owned by the Port Authority and was formerly operated by United Airlines. United Airlines utilized Hangar 14 as their primary ground service equipment maintenance hanger from its construction until March 31, 2006. Currently, the site is used by the Port Authority for the storage of numerous snow plows.

#### ***1.2.1 OWSS Removal***

On April 29 and 30, 2004, the original OWSS utilized by Hangar 14 was decommissioned. The OWSS structure was constructed of concrete and included one 550-gallon underground storage tank (UST). PCBs were detected in sludge samples collected from the OWSS.

#### ***1.2.2 APEX PCB Characterization Report, dated March 30, 2006***

A floor drain sampling program was initiated to investigate the results of the sludge samples. The scope of work included the review of historical records and operations with regards to the use of PCBs, evaluation of the hydraulic system in operation at Hangar 14, PCB screening (included wipe, sludge, wastewater and hydraulic fluid sampling), evaluation of the integrity of the floor drain system, and evaluation of the concrete structures within the hangar. Results of the evaluations noted that there were no PCBs present in the dust wipe samples. PCBs were noted in the concrete floor of Hangar 14 in excess of 1 part per million (ppm). The samples that indicated the presence of PCBs were collected adjacent to hydraulic system components. PCBs were detected within the

hydraulic fluid located within the hydraulic system servicing the site as well as in sludge and wastewater collected from the drain systems.

In October 2004, the readily accessible sludge and wastewater was removed from the drain systems. An integrity test was performed after the removal of the PCB contaminated materials; two of the four existing drain lines, Lines 1 and 4, could not be verified as leak proof. It was reported that these two lines were immediately removed from service by plugging their inlets. The hydraulic oil located within the hydraulic system at Hangar 14 was removed and replaced in 1994 after a waste disposal facility rejected the load for PCB contamination. It is believed that the current presence of PCBs in the hydraulic system is a result of oil leaching back into the system from porous components (e.g. seals). The report suggested remedial actions including a no action for the drain system, and remedial actions for the hydraulic system and concrete floor.

### ***1.2.3 United Airlines – Subsurface Investigation***

United Airlines performed a subsurface investigation of Hangar 14, which included soil and ground water sampling. In April and May 2005, twenty soil borings were installed and sampled throughout the Hangar 14 area. The twenty soil borings were installed during the initial phase of work and were installed within the hangar, through the hangar floor and outside the hangar near catch basins related to the floor drain system, and adjacent to sewer pipes connected to areas where PCBs had been previously detected. Upon review of the results of the initial twenty soil sample results, nine additional borings were installed in October and November 2005 near the former OWSS to further delineate PCBs. All soil samples were analyzed for PCBs and eight samples were analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs). Additionally, five ground water samples were obtained from existing monitoring wells surrounding Hangar 14 in May 2005. All ground water samples were analyzed for PCBs, VOCs and SVOCs.

Review of the analytical results for soil indicated that five soil borings (located on the southern and eastern portions of Hangar 14) noted the presence of total PCBs in excess of New Jersey Department of Environmental Protection (NJDEP's) Soil Cleanup Criteria (SCC) of 2.0 mg/kg. One soil boring (located on the southern side of Hangar 14) noted the presence of five polycyclic aromatic hydrocarbons (PAH) compounds in excess of NJDEP's SCC.

Analytical results for the ground water samples did not indicate the presence of any contaminants in excess of the NJDEP Groundwater Quality Criteria (GWQC).

### ***1.2.4 UST Closure Work Plan and Site Investigation Report***

After review of the OWSS closure/removal documentation, the Port Authority concluded that further investigation was required. HMM developed a Site Investigation Work Plan (SIWP) to determine if environmental media has been impacted as a result of the tank in accordance with NJDEP requirements. The activities present in the SIWP included the



following: the identification of the Area of Potential Environmental Concern (APEC); performance and sampling of soil borings; the collection of soil samples at, and adjacent to, the former location of the tank, and; laboratory analysis of soil samples. Given the size of the UST, NJDEP procedures require the collection and analysis of four soil samples. Five soil borings were sampled to ensure adequate area coverage. Additionally, the SIWP included a contingency for a ground water evaluation based on site conditions. Ground water was encountered during the OWSS decommission and removal investigation, thus the installation and sampling of one monitoring well was also included in the SIWP.

Review of the soil sampling results indicated elevated levels of three base neutral compounds above the NJDEP SCC: benzo(b)fluoranthene, benzo(a)anthracene, and benzo(a)pyrene. Benzo(a)pyrene was also detected above the NRDCSCC. Two PCBs were detected at concentrations above the NJDEP SCC: Aroclor-1242 and Aroclor-1254. Additionally, TPHC (Total Petroleum Hydrocarbons) was detected in SB-4 at 13,000 mg/kg. Elevated concentrations of base neutral compounds and TPHC are most likely attributed to historic fill found at the site, and not from an on-site source area.

Two samples (one sample and one duplicate sample) were collected from the monitoring well during the ground water sampling event. The ground water samples were analyzed for PP+40 and TPHC. Review of the ground water sampling results indicated levels of five metals (mercury, arsenic, cadmium, chromium and lead) and one PCB (Aroclor-1242) above the Ground Water Quality Standards (GWQS).

In response to the UST Closure Work Plan and Site Investigation Report, the NJDEP issued a Notice of Deficiency (dated January 26, 2007) to the Port Authority, indicating that a Remedial Investigation Work Plan (RIWP) was required in order to address the full extent PCB contamination in both soil and ground water. In response to the NJDEP's Notice of Deficiency, HMM developed a RIWP (dated April 2007) on behalf of the Port Authority.

#### ***1.2.5 Remedial Investigation/Remedial Action Selection Report***

Upon request from the Port Authority, HMM implemented the NJDEP approved Hangar 14 RIWP in June 2008. Nine soil borings and three monitoring wells were installed near the former OWSS/UST in an effort to delineate PCB contaminants previously found in soil and ground water. Soil samples revealed elevated concentrations of PCBs in and around the former OWSS at a depth of 14.5-15.0'. Concurrently, the three additional monitoring wells and existing monitoring well located near the former OWSS were sampled for PCBs. Aqueous analytical results indicated that PCB contaminants, which were present during the May 2006 sampling event, were not detected in any of the wells during the July 2008 sampling event. Additionally, four soil borings were installed inside of Hangar 14 along two floor drain lines (Floor Drain Lines 1 and 4) in order to determine if PCBs had leaked into the subsurface. Soil analytical results indicated PCBs were not detected along these two drain lines.

HMM provided a Remedial Action Selection “checklist” that identified the goals and objectives needed to successfully protect human health and the environment from the PCB contaminants found in the soil at Hangar 14. It was concluded that these objectives can be met by utilizing institutional (Deed Notice) and engineering controls, which will prohibit unauthorized disturbance of the impacted soil. This remedial action is cost-effective and technically feasible.

HMM also recommended collecting a confirmatory round of ground water samples in order to confirm the elimination of PCBs in ground water due to source removal and natural attenuation. The results of this ground water sampling event are discussed below.

## **2.0 FIELD PROCEDURES AND SAMPLING METHODOLOGY**

All work was performed in accordance with the Port Authority's "Field Standard Operating Manual" and in conformance with the NJDEP Field Sampling Procedures Manual (August 2005) and United States Environmental protection Agency (USEPA) requirements. The section describes the methods employed during sampling activities.

### **2.1 Ground Water Gauging and Sampling**

A Port Authority Materials Engineering representative gauged and sampled four monitoring wells at Hangar 14 on February 5<sup>th</sup>, 2009 (OWS-1, OWS-2, OWS-3, and MW-1). A total of 5 ground water samples were collected for chemical analysis, one of which served as a duplicate.

A phase interface probe was used to gauge the depth to ground water and total well depth. The probe is accurate to within 0.01 feet. The measurements were taken relative to the surveyed top of casing elevation of each well. Prior to gauging each well, the probe was decontaminated with isopropyl alcohol and deionized water as per NJDEP protocols.

Sufficient volume was collected for each sample to allow for laboratory analysis of PCBs. Field blanks were prepared per NJDEP field sampling protocols. Collected samples were shipped for analysis in accordance with USEPA and NJDEP protocols and procedures.

All ground water samples were collected via the low flow purging and sampling method specified in the NJDEP Field Sampling Procedures Manual (August 2005). Field parameters, including temperature, dissolved oxygen (DO), conductivity, pH, turbidity, and oxidation-reduction potential (ORP), were measured and recorded on Well Monitoring Data Sheets (See Appendix A).

Ground water samples were analyzed for PCBs (EPA Method 608) and sent to Test America, NJ for analysis.

### **3.0 INVESTIGATION RESULTS**

#### **3.1 Monitoring Well Gauging**

During the February 5<sup>th</sup>, 2009 sampling event, ground water elevations were observed at 7.24 to 8.93 feet below ground surface. Ground water elevations were calculated using data collected during this gauging event to produce a ground water contour map. The map was created using Surfer, a contour mapping program, and is shown in Figure 3. The Kriging method was used to estimate contour lines. Based on the calculations, shallow ground water at the Site tends to flow in an east-southeast direction. A contour Reporting Form is provided following Figure 3. Table 1 summarizes the data generated by the well gauging activities.

#### **3.2 Ground Water Analytical Results**

Analytical results were compared to N.J.A.C. 7:9C Appendix Table 1: “Specific Ground Water Quality Criteria” of the NJDEP Ground Water Quality Standards for Class II-A ground waters, last revised July 7<sup>th</sup>, 2008. Class II-A ground waters consist of all ground waters of the State designated for potable water or conversion to potable water. These standards were established to provide the basis for protecting potable water quality according to human health, welfare, and aesthetic considerations.

Laboratory analyses indicate that PCBs were not detected in any of the five-ground water samples collected. Analytical results are provided on Table 2 and illustrated on Figure 4. Laboratory data reports and electronic data deliverables are provided in Appendix B.

#### **3.3 QAQC – Field Sampling**

All QA/QC samples were collected and analyzed in accordance with N.J.A.C. 7:26E-2 and NJDEP Field Sampling Procedures Manual (August 2005).

##### **3.3.1 Field Blanks**

One field blank was prepared during this investigation. The field blank was prepared to indicate potential contamination from ambient air as well as from sampling instruments used to collect and transfer samples from point of collection into sample containers. The field blank was analyzed for PCBs. PCBs were not detected in the field blank indicating that samples were not compromised by cross-contamination.

##### **3.3.2 Field Duplicates**

One duplicate ground water sample was collected in the field during this investigation to evaluate the laboratory’s and field sampling team’s performance by comparing analytical results of two samples from the same location.

Comparison of analytical results from monitoring well OWS-2 with its respective duplicate sample did not show any deviations, indicating that the laboratory's performance in analysis of samples was precise and reproducible.

#### **4.0 CONCLUSIONS AND RECOMMENDATIONS**

PCBs were not detected during the July 2008 and February 2009 sampling events; thereby verifying that PCBs have been eliminated from the ground water at the Site. The Port Authority recommends no further action in regards to ground water at the Site.

Regarding soil contamination at Hangar 14, the Port Authority is actively pursuing an agreement with the City of Newark in order to record a deed notice on their owned portion of EWR.

## TABLES

**Table 1**  
**Newark Liberty International Airport**  
**Supplemental Remedial Investigation February 2009**  
**Monitoring Well Gauging Summary and Groundwater Table Elevations**

<b>Well Identification</b>	<b>Date Gauged</b>	<b>Depth to Groundwater</b>	<b>Well Casing Elevation</b>	<b>Groundwater Elevation</b>
MW-1	2/5/2009	7.61	9.55	1.94
OWS-1	2/5/2009	7.31	9.06	1.75
OWS-2	2/5/2009	8.93	10.93	2.0
OWS-3	2/5/2009	7.24	9.04	1.8

All measurements are in feet.



**Table 2**  
**Newark Liberty International Airport**  
**Supplemental Remedial Investigation February 2009**  
**Groundwater Analytical Results Summary**

Sample ID	GWQS ug/l	H14-MW01	H14-OWS-1	H14-OWS-2	H14-OWS-3
Sample Date		02/05/2009	02/05/2009	02/05/2009	02/05/2009
Unit		ug/l	ug/l	ug/l	ug/l
PCBs					
aroclor-1016	0.5	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
aroclor-1221	0.5	< 0.40 U	< 0.40 U	< 0.40 U	< 0.40 U
aroclor-1232	0.5	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
aroclor-1242	0.5	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
aroclor-1248	0.5	< 0.40 U	< 0.40 U	< 0.40 U	< 0.40 U
aroclor-1254	0.5	< 0.30 U	< 0.30 U	< 0.30 U	< 0.30 U
aroclor-1260	0.5	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
aroclor-1262	0.5	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
aroclor-1268	0.5	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U

**Notes:**

GWQS - NJDEP Groundwater Quality Standards

U - The compound was not detected at the indicated concentration.

## FIGURES





Source:  
United States Geological Survey, Elizabeth, NJ NY 7.5 minute  
Topographic Quadrangle, 1967, Photorevised 1981  
This map was developed using New Jersey Department of Environmental  
Protection Geographic Information System digital data, but this secondary  
product has not been verified by NJDEP and is not state-authorized.



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Feet

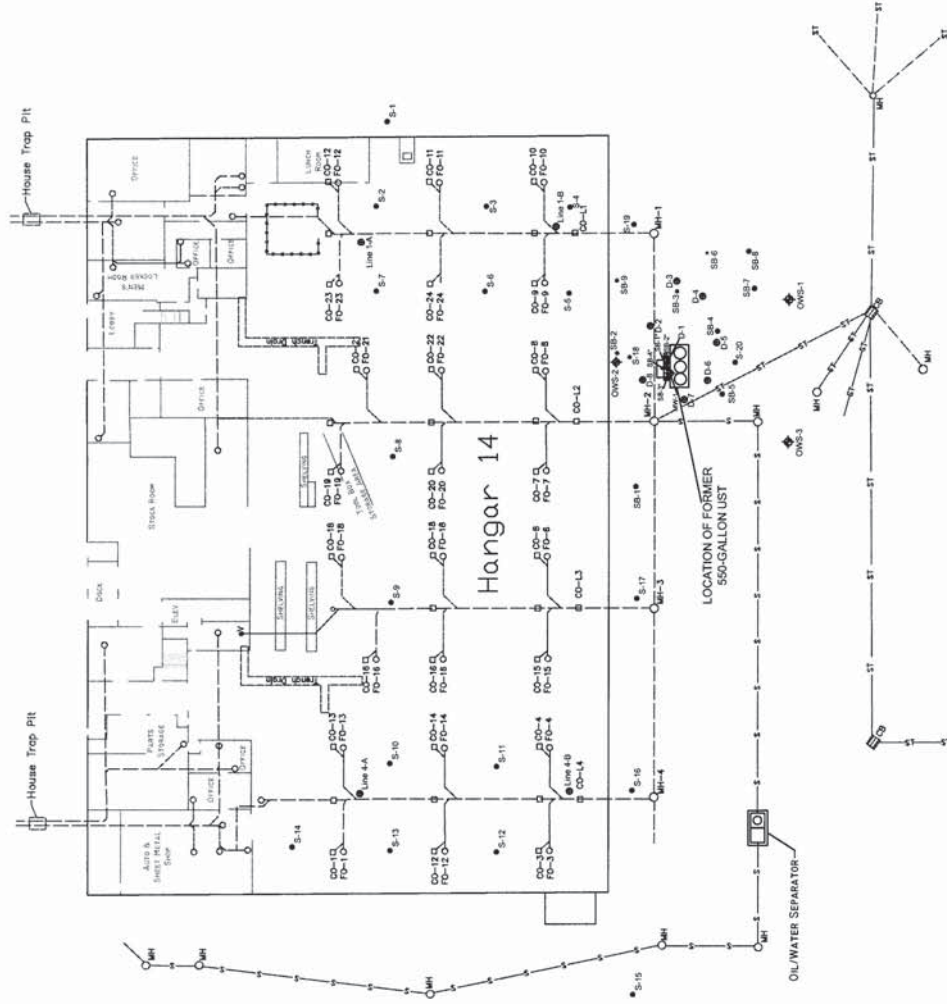
Hatch Mott  
MacDonald

27 Bleeker Street  
Milburn, New Jersey 07041

THE PORT AUTHORITY  
OF NEW YORK AND NEW JERSEY  
HANGAR 14  
NEWARK INTERNATIONAL AIRPORT  
CITY OF NEWARK, ESSEX COUNTY, NEW JERSEY  
FIGURE 1 - SITE LOCATION MAP

Designed	Drawn	Checked	Approved	Date
BOC	GMT	JNK		1/26/2006





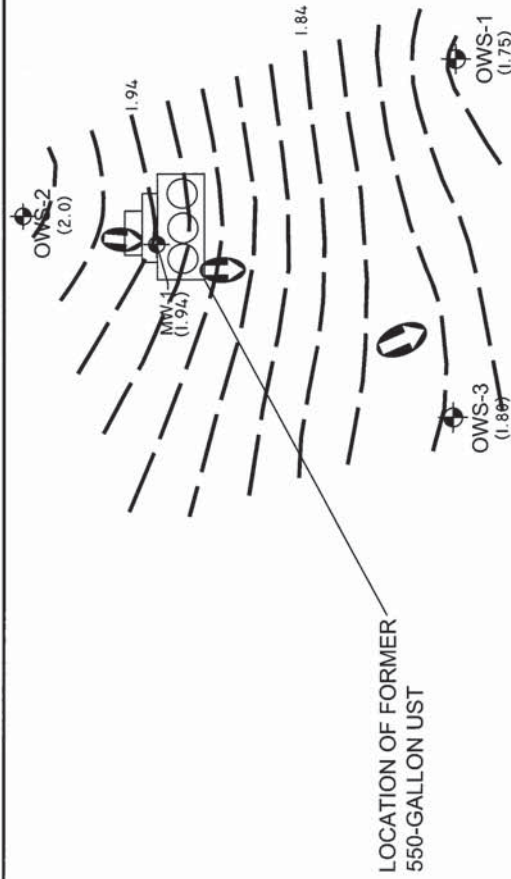
**LEGEND:**

- ⊕ D-1 HMM Delineation Soil Boring Location
- SB-1\* HMM Installed Soil Boring Location
- SB-1 APEX Installed Soil Boring Location
- ◆ MW-1 Existing Monitoring Well Location
- V Vent
- MH Manhole
- ▢ CB Catch Basin
- FD-12 Floor Drain
- CO-12 Clean-Out
- S — Underground Storm Water Line
- S — Underground Sanitary Sewer
- S — Below Grade Floor Drain Line
- X — Chain Link Fence

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY NEWARK LIBERTY INTERNATIONAL AIRPORT			
HANGAR 14 FIGURE 2 SITE PLAN MARCH 2009			
Designed	Drawn	Checked	Approved
			Date



# Hangar 14



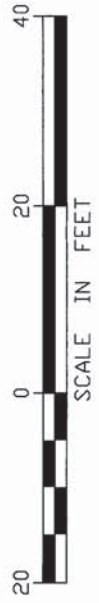
**LEGEND:**

- MW-1 Existing Monitoring Well Location (1.80)
- Ground Water Elevation (ft) (1.80)
- Ground Water Elevation Contour (ft) (1.80)
- Direction of Shallow Ground Water Flow

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY  
NEWARK LIBERTY INTERNATIONAL AIRPORT

HANGAR 14  
FIGURE 3  
GROUND WATER CONTOUR MAP  
FEBRUARY 05, 2008

Designed	Drawn	Checked	Approved	Date



NOTE: THIS IS A COURTESY COPY OF THIS RULE. ALL OF THE DEPARTMENT'S RULES ARE COMPILED IN TITLE 7 OF THE NEW JERSEY ADMINISTRATIVE CODE.

## APPENDIX G

### Contour Map Reporting Form

This reporting form shall accompany each ground water contour map submittal. Use additional sheets as necessary.

1. Did any surveyed well casing elevations change from the previous sampling event? Yes\_\_\_ No X. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

2. Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes\_\_\_ No X. If yes, identify these wells.

3. Are there any monitor wells present at the site but omitted from the contour map? Yes\_\_\_ No X. Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

4. Are there any monitor wells containing separate phase product during this measuring event? Yes\_\_\_ No X. Were any of the monitor wells with separate phase product included in the ground water contour map? Yes\_\_\_ No\_\_\_ . If yes, show the formula used to correct the water table elevation.

NOTE: THIS IS A COURTESY COPY OF THIS RULE. ALL OF THE DEPARTMENT'S RULES ARE COMPILED IN TITLE 7 OF THE NEW JERSEY ADMINISTRATIVE CODE.

5. Has the ground water flow direction changed more than 45 degrees from the previous ground water contour map? Yes \_\_\_ No X . If yes, discuss the reasons for the change.

6. Has ground water mounding and/or depressions been identified in the ground water contour map? Yes \_\_\_ No X . Unless the ground water mounds and/or depressions are caused by the ground water remediation system, discuss the reasons for this occurrence.

7. Are all the wells used in the contour map screened in the same water-bearing zone? Yes X No \_\_\_ . If no, justify inclusion of those wells.

8. Were the ground water contours computer generated X , computer aided \_\_\_ , or hand-drawn \_\_\_ ? If computer aided or generated, identify the interpolation method(s) used.

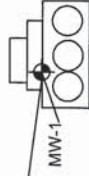
Kriging with Surfer

# Hangar 14

Sample ID	MW-1	MW-1	MW-1
Sample Date	5/16/2006	07/25/2008	02/05/2009
Unit	ug/l	ug/l	ug/l
Parameter	Concentration		
Total PCBs	11	ND	ND

Sample ID	OWS-2	OWS-2
Sample Date	07/25/2008	02/05/2009
Unit	ug/l	ug/l
Parameter	Concentration	
Total PCBs	ND	ND

Sample ID	OWS-1	OWS-1
Sample Date	07/25/2008	02/05/2009
Unit	ug/l	ug/l
Parameter	Concentration	
Total PCBs	ND	ND



MW-1

LOCATION OF FORMER  
550-GALLON UST

Sample ID	OWS_3	OWS-3
Sample Date	07/25/2008	02/05/2009
Unit	ug/l	ug/l
Parameter	Concentration	
Total PCBs	ND	ND

OWS-3

OWS-1

## LEGEND:

- Existing Monitoring Well Location (Installed by HMM)
- GWQS for Total PCBs = 0.5 ug/L
- Yellow Shading indicates an exceedance to the GWQS

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NEWARK LIBERTY INTERNATIONAL AIRPORT

HANGAR 14  
FIGURE 4  
GROUND WATER ANALYTICAL RESULTS  
MARCH 2009



Designed	Drawn	Checked	Approved	Date
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## **APPENDIX A**

### **Well Monitoring Data Sheets**

# WELL MONITORING DATA SHEET

PROJECT:	EWR - Hanger 14	CHARGE CODE:	A04-910.842
WELL DESIGNATION:	MW-1	DATE:	2/5/2009
LOW FLOW? <u>Y</u> / N If Yes, Enter Flow Rate	200 (ml's/min)	CASING DIAMETER:	2 (in)
WEATHER CONDITIONS:	12°F Sun	STICK UP DISTANCE	NA
PID :	188.0		

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	WATER (FEET)	PRODUCT (FEET)
PRE-PURGE:	0945	7.61	ND
POST-PURGE	1039	7.68	ND

DEPTH OF WELL:	15.91	(FEET)
DEPTH OF WATER	7.61	(FEET)
DEPTH OF WATER COLUMN	NA	(FEET)
FACTOR *	NA	
VOLUME TO BE REMOVED	NA	(LITERS)

\*FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

FACTOR = 2.471 FOR 4 INCH DIAMETER WELL CASING

[illegible]

SAMPLED BY:

SS

COMMENTS:

Pump on @ 0945

Sample time : 1040

**THE PORT AUTHORITY OF N.Y. & N.J.**

## MATERIALS ENGINEERING DIVISION

## WELL MONITORING DATA SHEET

PROJECT:	EWR - Hanger 14	CHARGE CODE:	A04-910.842
WELL DESIGNATION:	OWS-1	DATE:	2/5/2009
LOW FLOW? <u>Y</u> / N If Yes, Enter Flow Rate	200 (ml's/min)	CASING DIAMETER:	4 (in)
WEATHER CONDITIONS:	12°F Sun	STICK UP DISTANCE	NA
PID :	0.0		

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	WATER (FEET)	PRODUCT (FEET)
PRE-PURGE:	0855	7.31	ND
POST-PURGE:	0930	7.32	ND

DEPTH OF WELL:	11.61	(FEET)
DEPTH OF WATER	7.31	(FEET)
DEPTH OF WATER COLUMN	NA	(FEET)
FACTOR *	NA	
VOLUME TO BE REMOVED	NA	(LITERS)

\*FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

FACTOR = 2.471 FOR 4 INCH DIAMETER WELL CASING

[illegible]

SAMPLED BY:

TL

COMMENTS:

Pump on @ 0855

Sample time : 0931



**THE PORT AUTHORITY OF N.Y. & N.J.**

## MATERIALS ENGINEERING DIVISION

# WELL MONITORING DATA SHEET

PROJECT:	EWR - Hanger 14	CHARGE CODE:	A04-910.842
WELL DESIGNATION:	OWS-2	DATE:	2/5/2009
LOW FLOW? <u>Y</u> / N If Yes, Enter Flow Rate	230 (ml's/min)	CASING DIAMETER:	4 (in)
WEATHER CONDITIONS:	12°F Sun	STICK UP DISTANCE	NA
PID :	26.4		

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	WATER (FEET)	PRODUCT (FEET)
PRE-PURGE:	0846	8.93	ND
POST-PURGE	0924	9.28	ND

DEPTH OF WELL:	14.57	(FEET)
DEPTH OF WATER	8.93	(FEET)
DEPTH OF WATER COLUMN	NA	(FEET)
FACTOR *	NA	
VOLUME TO BE REMOVED	NA	(LITERS)

\*FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

FACTOR = 2.471 FOR 4 INCH DIAMETER WELL CASING

[illegible]

SAMPLED BY:

SS

COMMENTS:

Pump on @ 0846

Sample time : 0925

## MATERIALS ENGINEERING DIVISION WELL MONITORING DATA SHEET

PROJECT:	EWR - Hanger 14	CHARGE CODE:	A04-910.842
WELL DESIGNATION:	OWS-3	DATE:	2/5/2009
LOW FLOW? <u>Y</u> / N If Yes, Enter Flow Rate	280 (ml's/min)	CASING DIAMETER:	4 (in)
WEATHER CONDITIONS:	12°F Sun	STICK UP DISTANCE	
PID :	0.0		

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	WATER (FEET)	PRODUCT (FEET)
PRE-PURGE:	0955	7.24	ND
POST-PURGE:	1030	7.24	ND

DEPTH OF WELL:	12.71	(FEET)
DEPTH OF WATER	7.24	(FEET)
DEPTH OF WATER COLUMN	NA	(FEET)
FACTOR *	NA	
VOLUME TO BE REMOVED	NA	(LITERS)

\*FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING  
FACTOR = 2.471 FOR 4 INCH DIAMETER WELL CASING

[illegible]

SAMPLED BY:

TL

COMMENTS:

Pump on @ 0955

Sample time : 1031

## TestAmerica Edison

DATE: 2/5/2009

**CLIENT:** Port Authority

**SITE:** EWR - Hanger 14

WEATHER: 120F Sun

ARRIVAL: 0745

DEPARTURE: 1200

**JOB #:** E659

ANALYST / FIELD SAMPLER: Steve Schulze

**FIELD SAMPLER:**

## FIELD INSTRUMENT AND CALIBRATION DATA

## METER ID'S

	METER
DO	E-011
pH	E-028
COND.	E-006
ORP	E-009
TURBIDITY	E-20

PROBE
EP-028
EP-013
EP-025
EP-029

**CALIBRATION NOTES:**

\* All meters are temperature compensating

## DISSOLVED OXYGEN

Water Temp (°C)	13.8
Barometric Press (mm Hg)	769
O2 Saturation %	100

## TURBIDITY

Set to 10.00 NTU	10.01
Read 1.00 NTU	1.00

pH

Buffer 4.00	4.01	Temp (°C)	13.7
Buffer 7.00	7.00	Temp (°C)	13.8
Buffer 10.00	10.02	Temp (°C)	13.7

**Lot # and Expiration Date**

A6289 10/10

---

A7254 09/09

---

NMV1 05/10

**ORP**

pH buffer 7.00 w/quinoxaline	97.3	Temp (°C)	13.8
pH buffer 4.00 w/quinoxaline	263.8	Temp (°C)	13.8

### SPECIFIC CONDUCTANCE

Standard	1000 $\pm$ 10 $\mu$ S/cm NaCl
Reading	1000
Temp ( $^{\circ}$ C)	14.0

**Lot # and Expiration Date**

A6283 10/11

NOTES:



## TestAmerica Edison

DATE: 2/5/2009

**CLIENT:** Port Authority

**SITE:** EWR - Hanger 14

**WEATHER:** 120F Sun

ARRIVAL: 0745

DEPARTURE: 1200

**JOB #:** E659

ANALYST / FIELD SAMPLER: Tom Lesinski

**FIELD SAMPLER:**

## FIELD INSTRUMENT AND CALIBRATION DATA

## METER ID'S

	METER	PROBE
DO	E-003	EP-032
pH	E-029	EP-016
COND.	E-010	EP-018
ORP	E-012	EP-003
TURBIDITY	E-015	

**CALIBRATION NOTES:**

\* All meters are temperature compensating

## DISSOLVED OXYGEN

Water Temp (°C)	13.1
Barometric Press (mm Hg)	769
O2 Saturation %	100

## TURBIDITY

Set to 10.00 NTU	10.00
Read 1.00 NTU	1.00

pH

				Lot # and Expiration Date
Buffer 4.00	4.01	Temp (°C)	12.6	A6289 10/10
Buffer 7.00	7.00	Temp (°C)	12.6	A7254 09/09
Buffer 10.00	10.01	Temp (°C)	12.6	NMV1 05/10

ORP

pH buffer 7.00 w/quinhdrone	88.8	Temp (°C)	12.8
pH buffer 4.00 w/quinhdrone	264	Temp (°C)	12.8

### SPECIFIC CONDUCTANCE

Standard	1000 ± 10 uS/cm NaCl	Lot # and Expiration Date
Reading	1000	A6283 10/11
Temp (°C)	12.6	

NOTES:

## **APPENDIX B**

### **Laboratory Data Reports and Electronic Data Deliverables**



Feb 13, 2009  
Port Authority NY/NJ  
241 Erie Street  
Jersey City, NJ 07310

Attention: Mr. Angelos Zafirelis

**TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

777 New Durham Road  
Edison, NJ 08817  
Tel 732 549 3900  
Fax 732 549 3679  
www.testamericainc.com  
Federal ID #:23-29199996

Laboratory Results  
Job No. E659 - EWR-Hanger 14

Dear Mr. Zafirelis:

Enclosed are the results you requested for the following sample(s) received at our laboratory on February 5, 2009.

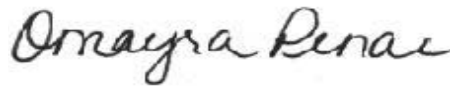
<u>Lab No.</u>	<u>Client ID</u>	<u>Analysis Required</u>
982649	H14-OWS01-020509WG01	PCBs
982650	H14-OWS02-020509WG01	PCBs
982651	H14-OWS2D-020509WG1P	PCBs
982652	H14-OWS03-020509WG01	PCBs
982653	H14-MW01-020509WG01	PCBs
982654	H14-FB-01-020509WQ01	PCBs

This report is not to be reproduced, except in full, without the written approval of the laboratory.

TestAmerica Edison has following Laboratory Certifications: New Jersey(12028),  
New York(11452), Pennsylvania(68-00522), Connecticut(PH-0200), Rhode Island(LAO00132)

If you have any questions, please contact me at (732) 549-3900.

Very Truly Yours,



Omayra Penas  
Project Manager

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<b>Analytical Results Summary .....</b>	<b>1</b>
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Raw Data .....	36
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## **Analytical Results Summary**

Client ID: OWS01-020509WG01  
Site: EWR-Hanger 14

Lab Sample ID: 982649  
Lab Job No: E659

Date Sampled: 02/05/09  
Date Received: 02/05/09  
Date Extracted: 02/09/09  
Date Analyzed: 02/10/09  
GC Column: StxCLP1  
Instrument ID: PESTGC6.i

Matrix: WATER  
Sample Volume: 970 ml  
Extract Final Volume: 5.0 ml  
Dilution Factor: 1.0  
Lab File ID: nr078647.d

ORGANOCHLORINE PCBs - GC/ECD  
METHOD 608

<u>Parameter</u>	Analytical Results <u>Units: ug/l</u>	Method Detection
		Limit <u>Units: ug/l</u>
Aroclor-1016	ND	0.23
Aroclor-1221	ND	0.36
Aroclor-1232	ND	0.26
Aroclor-1242	ND	0.21
Aroclor-1248	ND	0.36
Aroclor-1254	ND	0.34
Aroclor-1260	ND	0.20
Aroclor-1262	ND	0.18
Aroclor-1268	ND	0.18

Client ID: OWS02-020509WG01  
Site: EWR-Hanger 14

Lab Sample ID: 982650  
Lab Job No: E659

Date Sampled: 02/05/09  
Date Received: 02/05/09  
Date Extracted: 02/09/09  
Date Analyzed: 02/10/09  
GC Column: StxCLP1  
Instrument ID: PESTGC6.i

Matrix: WATER  
Sample Volume: 990 ml  
Extract Final Volume: 5.0 ml  
Dilution Factor: 1.0  
Lab File ID: nr078648.d

ORGANOCHLORINE PCBs - GC/ECD  
METHOD 608

<u>Parameter</u>	<u>Analytical Results</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Aroclor-1016	ND	0.23
Aroclor-1221	ND	0.36
Aroclor-1232	ND	0.26
Aroclor-1242	ND	0.21
Aroclor-1248	ND	0.36
Aroclor-1254	ND	0.34
Aroclor-1260	ND	0.20
Aroclor-1262	ND	0.18
Aroclor-1268	ND	0.18

Client ID: OWS2D-020509WG1P  
Site: EWR-Hanger 14

Lab Sample ID: 982651  
Lab Job No: E659

Date Sampled: 02/05/09  
Date Received: 02/05/09  
Date Extracted: 02/09/09  
Date Analyzed: 02/10/09  
GC Column: StxCLP1  
Instrument ID: PESTGC6.i

Matrix: WATER  
Sample Volume: 990 ml  
Extract Final Volume: 5.0 ml  
Dilution Factor: 1.0  
Lab File ID: nr078649.d

ORGANOCHLORINE PCBs - GC/ECD  
METHOD 608

<u>Parameter</u>	Analytical Results		Method Detection
	<u>Units: ug/l</u>		<u>Limit</u> <u>Units: ug/l</u>
Aroclor-1016	ND		0.23
Aroclor-1221	ND		0.36
Aroclor-1232	ND		0.26
Aroclor-1242	ND		0.21
Aroclor-1248	ND		0.36
Aroclor-1254	ND		0.34
Aroclor-1260	ND		0.20
Aroclor-1262	ND		0.18
Aroclor-1268	ND		0.18

Client ID: OWS03-020509WG01  
Site: EWR-Hanger 14

Lab Sample ID: 982652  
Lab Job No: E659

Date Sampled: 02/05/09  
Date Received: 02/05/09  
Date Extracted: 02/09/09  
Date Analyzed: 02/10/09  
GC Column: StxCLP1  
Instrument ID: PESTGC6.i

Matrix: WATER  
Sample Volume: 990 ml  
Extract Final Volume: 5.0 ml  
Dilution Factor: 1.0  
Lab File ID: nr078650.d

ORGANOCHLORINE PCBs - GC/ECD  
METHOD 608

<u>Parameter</u>	<u>Analytical Results</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Aroclor-1016	ND	0.23
Aroclor-1221	ND	0.36
Aroclor-1232	ND	0.26
Aroclor-1242	ND	0.21
Aroclor-1248	ND	0.36
Aroclor-1254	ND	0.34
Aroclor-1260	ND	0.20
Aroclor-1262	ND	0.18
Aroclor-1268	ND	0.18



Client ID: MW01-020509WG01  
Site: EWR-Hanger 14

Lab Sample ID: 982653  
Lab Job No: E659

Date Sampled: 02/05/09  
Date Received: 02/05/09  
Date Extracted: 02/09/09  
Date Analyzed: 02/10/09  
GC Column: StxCLP1  
Instrument ID: PESTGC6.i

Matrix: WATER  
Sample Volume: 990 ml  
Extract Final Volume: 5.0 ml  
Dilution Factor: 1.0  
Lab File ID: nr078651.d

ORGANOCHLORINE PCBs - GC/ECD  
METHOD 608

<u>Parameter</u>	Analytical Results		Method Detection
	<u>Units: ug/l</u>		<u>Limit</u>
Aroclor-1016	ND		0.23
Aroclor-1221	ND		0.36
Aroclor-1232	ND		0.26
Aroclor-1242	ND		0.21
Aroclor-1248	ND		0.36
Aroclor-1254	ND		0.34
Aroclor-1260	ND		0.20
Aroclor-1262	ND		0.18
Aroclor-1268	ND		0.18

## **General Information**

Chain of Custody



# SAMPLE RECEIPT LOG/VARIANCE REPORT

TestAmerica Edison Job Number: E659

Date Received: 2-5-09 Time Received: 17:00 Time Staged: \_\_\_\_\_

Client Name: PA/NY/NJ No. of Coolers Received: 1

Project No./Job or Site Name: 934382

Method of Shipment: TestAmerica Courier ☒ Client Courier \_\_\_\_\_ FedEx \_\_\_\_\_ Other \_\_\_\_\_

Is an air bill included with shipment? Yes \_\_\_\_\_ No ☒ (Attach copy to chain of custody form)

Air Bill No. \_\_\_\_\_

Cooler Temp 2°C Ice Present: Yes ☒ No \_\_\_\_\_ Thermometer ID: # 1R68

Custody Seal Intact: Yes \_\_\_\_\_ No ☒ Custody Seal No. \_\_\_\_\_

Head space in VOA Yes \_\_\_\_\_ No ☒ Note: \_\_\_\_\_

Sample Control Technician: [Signature]

Comments:

- |  |   |
|--|---|
| <input type="checkbox"/> Illegible COC                             | <input type="checkbox"/> Temperature outside acceptable range*      |
| <input type="checkbox"/> No client/site name                       | <input type="checkbox"/> No cooler, samples received by hand        |
| <input type="checkbox"/> Number of containers does not match COC   | <input type="checkbox"/> Samples unpreserved*                       |
| <input type="checkbox"/> No sample time*                           | <input type="checkbox"/> pH outside specified range*                |
| <input type="checkbox"/> No sample date*                           | <input type="checkbox"/> Wrong preservative sticker on bottle*      |
| <input type="checkbox"/> No matrix*                                | <input type="checkbox"/> Wrong preservative for requested analysis* |
| <input type="checkbox"/> No sample ID*                             | <input type="checkbox"/> Broken sample *                            |
| <input type="checkbox"/> No TAT                                    | <input type="checkbox"/> Label missing/illegible/washed off *       |
| <input type="checkbox"/> Analysis doesn't match bottles received*  | <input type="checkbox"/> Sample missing *                           |
| <input type="checkbox"/> Samples received outside of holding time* | <input type="checkbox"/> Wrong sample container*                    |
| <input type="checkbox"/> No COC received                           | <input type="checkbox"/> Limited volume *                           |
| <input type="checkbox"/> Sample ID's don't match COC ID's*         | <input type="checkbox"/> No analysis indicated                      |
| <input type="checkbox"/> Sample time/date doesn't match COC*       | <input type="checkbox"/> MEOH w/o % solids                          |
- \*Please note sample # below

Project Manager Review: Openas

Date: 2/9/09

Number of Unused methanol vials/Encores returned: \_\_\_\_\_

Scale returned: \_\_\_\_\_

## Laboratory Chronicles

**INTERNAL CUSTODY RECORD  
AND  
LABORATORY CHRONICLE  
TestAmerica Edison**

**777 New Durham Road, Edison, New Jersey  
08817**

**Job No:** E659

**Site:** EWR-Hanger 14

**Client:** Port Authority NY/NJ

**PESTGC**

**608**

<b>Lab Sample ID</b>	<b>Date Sampled</b>	<b>Date Received</b>	<b>Preparation Date</b>	<b>Technician's Name</b>	<b>Analysis Date</b>	<b>Analyst's Name</b>	<b>QA Batch</b>
<b><u>WATER</u></b>							
982649	2/5/2009	2/05/2009	2/9/2009	Chen, Mandi	2/10/2009	Kapoor, Sita	8034
982650	2/5/2009	2/05/2009	2/9/2009	Chen, Mandi	2/10/2009	Kapoor, Sita	8034
982651	2/5/2009	2/05/2009	2/9/2009	Chen, Mandi	2/10/2009	Kapoor, Sita	8034
982652	2/5/2009	2/05/2009	2/9/2009	Chen, Mandi	2/10/2009	Kapoor, Sita	8034
982653	2/5/2009	2/05/2009	2/9/2009	Chen, Mandi	2/10/2009	Kapoor, Sita	8034
982654	2/5/2009	2/05/2009	2/9/2009	Chen, Mandi			8034

## Methodology Review

## Analytical Methodology Summary

### Volatile Organics:

Unless otherwise specified, water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Drinking water samples are analyzed by EPA Method 524.2 Rev 4.1. Solid samples are analyzed for volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8260B.

### Acid and Base/Neutral Extractable Organics:

Unless otherwise specified, water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270C.

### GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8260B and 8270C. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatile, 15 for base/neutrals and 10 for acid extractables).

### Organochlorine Pesticides, PCBs & Herbicides:

Unless otherwise specified, water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8081A for Organochlorine Pesticides and Method 8082 for PCBs. Organochlorine Herbicides are analyzed using SW846 Method 8151A.

### Total Petroleum Hydrocarbons:

Unless otherwise specified, water and solid samples are analyzed for Total Petroleum Hydrocarbons using NJDEP Method OQA-QAM-025, "Quantitation of Semi-Volatile Petroleum Products in Water, Soil, Sediment and Sludge".

### Diesel Range Organics (DRO) and Gasoline Range Organics (GRO):

Soil and water samples are analyzed for DRO and GRO as the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8015B (Non-Halogenated Organics Using GC/FID).



#### Metals Analysis:

Metals analyses are performed by any of three techniques specified by a Method Code provided on each data report page, as follows:

MS - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)- Mass Spectrometry (MS)

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)

CV - Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020) and "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition), as appropriate. Solid samples are prepared and analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition).

Specific method references for ICP analyses are:

Water Matrix - EPA 200.7/SW846 6010B  
Solid Matrix - SW846 6010B

The method reference for ICP-MS analysis is:

Non-Potable Water Matrix - EPA 200.8

Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1/7470A and solid Method 7471A.

#### Cyanide:

Drinking water and wastewater samples are analyzed for cyanide using EPA Method 335. Cyanide is determined in solid samples using SW846 Method 9012A/9012B.

#### Phenols:

Water samples are analyzed for total phenols using EPA Method 420.1. Total phenols are determined in water by use of SW846 Methods 9065+9066, as appropriate.

#### Hexavalent Chromium

Water samples are analyzed for hexavalent chromium using SW846 Method 7196A, SW846 Method 7199 or USGS Method I-1232-85. Hexavalent chromium in solid samples is determined using the SW846 Method 3060A preparation followed by analysis via SW846 Method 7196A or 7199.

#### Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability	Method 1020 Method 1030
Corrosivity	Water pH Method 9040B Soil pH Method 9045C
Toxicity Characteristic Leaching Procedure	Method 1311
Synthetic Precipitation Leaching Procedure	Method 1312

#### Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 18th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

## Data Reporting Qualifiers

#### ORGANIC DATA REPORTING QUALIFIERS

- ND - The compound was not detected at the indicated concentration.
- J - Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified quantitation limit but greater than zero. The concentration given is an approximate value.
- B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.
- P - For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%.
- \* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.

#### INORGANIC DATA REPORTING QUALIFIERS (SW-846 METHODS ONLY)

- ND - The compound was not detected at the indicated concentration.
- B - Reported value is less than the Method Detection Limit but greater than or equal to the Instrument Detection Limit.
- E - The reported value is estimated because of the presence of interference. See explanatory note in the Nonconformance Summary if the problem applies to all of the samples or on the individual Inorganic Analysis Data Sheet if the problem is isolated.
- M - Duplicate injection precision not met on the Furnace Atomic Absorption analysis.
- N - The spiked sample recovery is not within control limits.
- S - The reported value was determined by the Method of Standard Additions (MSA).
- \* - Duplicate Analysis is not within control limits.
- W - Post digestion spike for Furnace Atomic Absorption analysis is out of control.
- + - Correlation coefficient for MSA is less than 0.995.

INORGANIC DATA REPORTING QUALIFIERS (SW-846 METHODS ONLY)

(continued)

M Column - Method Qualifiers

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP).

A - Flame Atomic Absorption Spectroscopy (FAA).

F - Graphite Furnace Atomic Absorption Spectroscopy (GFAA).

CV - Cold Vapor Atomic Absorption Spectroscopy.

MS - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)-  
Mass Spectrometry (MS).

## Non-Conformance Summary



## Nonconformance Summary

TestAmerica Edison Job # : E659

**Client:** Port Authority NY/NJ

**Date:** 2/13/2009

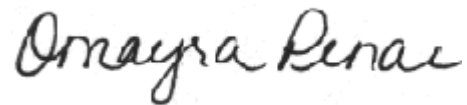
**Sample Receipt:**

Sample delivery conforms with requirements.

**Pesticides/PCBs:**

All data conforms with method requirements.

I certify that the test results contained in this data package meet all requirements of NELAC both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this package has been authorized by the Laboratory Director or their designee, as verified by the following signature.



Omayra Penas  
Project Manager

## **GC Forms and Data**

Method 608 (Pesticides/PCBs) Results Summary

Client ID: OWS01-020509WG01  
Site: EWR-Hanger 14

Lab Sample ID: 982649  
Lab Job No: E659

Date Sampled: 02/05/09  
Date Received: 02/05/09  
Date Extracted: 02/09/09  
Date Analyzed: 02/10/09  
GC Column: StxCLP1  
Instrument ID: PESTGC6.i

Matrix: WATER  
Sample Volume: 970 ml  
Extract Final Volume: 5.0 ml  
Dilution Factor: 1.0  
Lab File ID: nr078647.d

ORGANOCHLORINE PCBs - GC/ECD  
METHOD 608

<u>Parameter</u>	<u>Analytical Results</u> <u>Units: ug/l</u>	<u>Method Detection</u>
		<u>Limit</u> <u>Units: ug/l</u>
Aroclor-1016	ND	0.23
Aroclor-1221	ND	0.36
Aroclor-1232	ND	0.26
Aroclor-1242	ND	0.21
Aroclor-1248	ND	0.36
Aroclor-1254	ND	0.34
Aroclor-1260	ND	0.20
Aroclor-1262	ND	0.18
Aroclor-1268	ND	0.18

Client ID: OWS02-020509WG01  
Site: EWR-Hanger 14

Lab Sample ID: 982650  
Lab Job No: E659

Date Sampled: 02/05/09  
Date Received: 02/05/09  
Date Extracted: 02/09/09  
Date Analyzed: 02/10/09  
GC Column: StxCLP1  
Instrument ID: PESTGC6.i

Matrix: WATER  
Sample Volume: 990 ml  
Extract Final Volume: 5.0 ml  
Dilution Factor: 1.0  
Lab File ID: nr078648.d

ORGANOCHLORINE PCBs - GC/ECD  
METHOD 608

<u>Parameter</u>	Analytical Results <u>Units: ug/l</u>	Method Detection
		Limit <u>Units: ug/l</u>
Aroclor-1016	ND	0.23
Aroclor-1221	ND	0.36
Aroclor-1232	ND	0.26
Aroclor-1242	ND	0.21
Aroclor-1248	ND	0.36
Aroclor-1254	ND	0.34
Aroclor-1260	ND	0.20
Aroclor-1262	ND	0.18
Aroclor-1268	ND	0.18

Client ID: OWS2D-020509WG1P  
Site: EWR-Hanger 14

Lab Sample ID: 982651  
Lab Job No: E659

Date Sampled: 02/05/09  
Date Received: 02/05/09  
Date Extracted: 02/09/09  
Date Analyzed: 02/10/09  
GC Column: StxCLP1  
Instrument ID: PESTGC6.i

Matrix: WATER  
Sample Volume: 990 ml  
Extract Final Volume: 5.0 ml  
Dilution Factor: 1.0  
Lab File ID: nr078649.d

ORGANOCHLORINE PCBs - GC/ECD  
METHOD 608

<u>Parameter</u>	Analytical Results <u>Units: ug/l</u>	Method Detection
		Limit <u>Units: ug/l</u>
Aroclor-1016	ND	0.23
Aroclor-1221	ND	0.36
Aroclor-1232	ND	0.26
Aroclor-1242	ND	0.21
Aroclor-1248	ND	0.36
Aroclor-1254	ND	0.34
Aroclor-1260	ND	0.20
Aroclor-1262	ND	0.18
Aroclor-1268	ND	0.18

Client ID: OWS03-020509WG01  
Site: EWR-Hanger 14

Lab Sample ID: 982652  
Lab Job No: E659

Date Sampled: 02/05/09  
Date Received: 02/05/09  
Date Extracted: 02/09/09  
Date Analyzed: 02/10/09  
GC Column: StxCLP1  
Instrument ID: PESTGC6.i

Matrix: WATER  
Sample Volume: 990 ml  
Extract Final Volume: 5.0 ml  
Dilution Factor: 1.0  
Lab File ID: nr078650.d

ORGANOCHLORINE PCBs - GC/ECD  
METHOD 608

<u>Parameter</u>	Analytical Results		Method Detection
	<u>Units: ug/l</u>		<u>Limit</u> <u>Units: ug/l</u>
Aroclor-1016	ND		0.23
Aroclor-1221	ND		0.36
Aroclor-1232	ND		0.26
Aroclor-1242	ND		0.21
Aroclor-1248	ND		0.36
Aroclor-1254	ND		0.34
Aroclor-1260	ND		0.20
Aroclor-1262	ND		0.18
Aroclor-1268	ND		0.18



Client ID: MW01-020509WG01  
Site: EWR-Hanger 14

Lab Sample ID: 982653  
Lab Job No: E659

Date Sampled: 02/05/09  
Date Received: 02/05/09  
Date Extracted: 02/09/09  
Date Analyzed: 02/10/09  
GC Column: StxCLP1  
Instrument ID: PESTGC6.i

Matrix: WATER  
Sample Volume: 990 ml  
Extract Final Volume: 5.0 ml  
Dilution Factor: 1.0  
Lab File ID: nr078651.d

ORGANOCHLORINE PCBs - GC/ECD  
METHOD 608

<u>Parameter</u>	<u>Analytical Results</u> <u>Units: ug/l</u>	<u>Method Detection</u>
		<u>Limit</u> <u>Units: ug/l</u>
Aroclor-1016	ND	0.23
Aroclor-1221	ND	0.36
Aroclor-1232	ND	0.26
Aroclor-1242	ND	0.21
Aroclor-1248	ND	0.36
Aroclor-1254	ND	0.34
Aroclor-1260	ND	0.20
Aroclor-1262	ND	0.18
Aroclor-1268	ND	0.18

## QA Summary

## GC ORGANICS SURROGATE RECOVERY

Matrix: WATER

Level: LOW

Lab Job No: E659

	LABORATORY SAMPLE NO.	S1 %REC #	S2 %REC #	TOT OUT
	=====	=====	=====	=====
01	WP040C	66	77	0
02	8034BS	73		0
03	8034BSD	71		0
04	982649	84	72	0
05	982650	61	33	0
06	982651	42	29	0
07	982652	69	38	0
08	982653	67	32	0
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

ADVISORY  
QC LIMITS

S1 = Tetrachloro-m-xylene(s (23-138)

S2 = Decachlorobiphenyl(sur (15-140)

# Column to be used to flag recovery values

\* Values outside of advisory QC limits

D Surrogate diluted out

R Surrogate removed during H2SO4 cleanup procedure

\*\* Not detected due to coeluting interference

GC BLANK SPIKE RECOVERY  
METHOD 608

QA Batch: 8034

Compound	SPIKE ADDED (ug/L)	BS CONCENTRATION (ug/L)	BS % REC.	QC. LIMITS REC.
=====	=====	=====	=====	=====
Aroclor-1016	5.0	4.2	84	50-114
Aroclor-1260	5.0	4.3	86	8-127

# Column to be used to flag recovery values with an asterik

Spike Recovery: 0 out of 2 outside limits

GC ORGANICS BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY SUMMARY  
METHOD 608

Matrix: WATER

QA Batch: 8034

Level: LOW

Compound	SPIKE ADDED (ug/L)	BS % REC.	BSD % REC.	RPD
=====	=====	=====	=====	=====
Aroclor-1016	5.0	84	84	0.0
Aroclor-1260	5.0	86	88	2.3

\* Values outside of QC limits

## GC ORGANICS METHOD BLANK SUMMARY

LAB SAMPLE NO.

WP040C

Matrix: WATER

Date Analyzed: 02/10/09

Level: LOW

Time Analyzed: 1614

Instrument ID: PESTGC6

Lab File ID: NR078643

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT ID.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	=====	=====	=====	=====
01	8034BS	8034BS	nr078644.d	02/10/09
02	8034BSD	8034BSD	nr078645.d	02/10/09
03	OWS01-020509	982649	nr078647.d	02/10/09
04	OWS02-020509	982650	nr078648.d	02/10/09
05	OWS2D-020509	982651	nr078649.d	02/10/09
06	OWS03-020509	982652	nr078650.d	02/10/09
07	MW01-020509W	982653	nr078651.d	02/10/09
08				
09				
10				
11				
12				
13				
14				
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29				
30				

COMMENTS:



Client ID: WP040C  
Site:

Lab Sample ID: WP040C  
Lab Job No: E659

Date Sampled: \_\_\_\_\_  
Date Received: \_\_\_\_\_  
Date Extracted: 02/09/09  
Date Analyzed: 02/10/09  
GC Column: StxCLP1  
Instrument ID: PESTGC6.i

Matrix: WATER  
Sample Volume: 1000 ml  
Extract Final Volume: 5.0 ml  
Dilution Factor: 1.0  
Lab File ID: nr078643.d

ORGANOCHLORINE PCBs - GC/ECD  
METHOD 608

<u>Parameter</u>	Analytical Results <u>Units: ug/l</u>	Method Detection
		Limit <u>Units: ug/l</u>
Aroclor-1016	ND	0.23
Aroclor-1221	ND	0.36
Aroclor-1232	ND	0.26
Aroclor-1242	ND	0.21
Aroclor-1248	ND	0.36
Aroclor-1254	ND	0.34
Aroclor-1260	ND	0.20
Aroclor-1262	ND	0.18
Aroclor-1268	ND	0.18

# Pesticide/PCB Retention Time Shift Summary

(for databatch - /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b,  
as of 02/12/2009 12:31)

Instrument ID: PESTGC6.i    Column ID: StxCLP1    Primary Column

Dates of Analysis: 02/10/09    to 02/10/09

Retention Time Shift Marker - Decachlorobiphenyl(surr)  
QC Limit for RT Shift is 0.10 min

Absolute Surrogate RT From Cal. Standard Level 3: DCB = 8.217

Lab Sample ID	Data File	Injection Time	RT	DLT RT
WP040C	nr078643.d	10-FEB-2009 16:14	8.217	0.000
8034BS	nr078644.d	10-FEB-2009 16:27	8.217	0.000
8034BSD	nr078645.d	10-FEB-2009 16:39	8.217	0.000
982649	nr078647.d	10-FEB-2009 17:05	8.213	0.004
982650	nr078648.d	10-FEB-2009 17:18	8.217	0.000
982651	nr078649.d	10-FEB-2009 17:31	8.217	0.000
982652	nr078650.d	10-FEB-2009 17:44	8.213	0.004
982653	nr078651.d	10-FEB-2009 17:56	8.213	0.004

D = Surrogate diluted out.

## Analytical Sequence

## GC ORGANICS ANALYTICAL SEQUENCE SUMMARY

Instrument ID: PESTGC6.i

Column ID: StxCLP1

Primary Column

	Lab Sample ID	Client Sample ID	Lab File ID	Sample Type	Inj. Date	Inj. Time
	=====	=====	=====	=====	=====	=====
1	SGPESTL3_00003		nr078617.d	CALIB_3	02/10/09	1041
2	SG608PSTL3_00003		nr078618.d	CALIB_1	02/10/09	1054
3	SGPESTL2_00003		nr078619.d	CALIB_2	02/10/09	1107
4	SGPESTL4_00003		nr078620.d	CALIB_4	02/10/09	1120
5	SGPESTL5_00003		nr078621.d	CALIB_5	02/10/09	1133
6	SG1660L3_00004		nr078623.d	CALIB_3	02/10/09	1158
7	SG608L1_00004		nr078624.d	CALIB_1	02/10/09	1211
8	SG1660L2_00004		nr078625.d	CALIB_2	02/10/09	1224
9	SG1660L4_00004		nr078626.d	CALIB_4	02/10/09	1236
10	SG1660L5_00004		nr078627.d	CALIB_5	02/10/09	1249
11	SG1248L3_00004		nr078629.d	CALIB_3	02/10/09	1315
12	SG1248L1_00004		nr078630.d	CALIB_1	02/10/09	1327
13	SG1248L2_00004		nr078631.d	CALIB_2	02/10/09	1340
14	SG1248L4_00004		nr078632.d	CALIB_4	02/10/09	1353
15	SG1248L5_00004		nr078633.d	CALIB_5	02/10/09	1406
16	SG1221L3_00006		nr078634.d	CALIB_3	02/10/09	1419
17	SG1232L3_00004		nr078635.d	CALIB_3	02/10/09	1431
18	SG1242L3_00004		nr078636.d	CALIB_3	02/10/09	1444
19	SG1254L3_00004		nr078637.d	CALIB_3	02/10/09	1457
20	SG1262L3_00005		nr078638.d	CALIB_3	02/10/09	1510
21	SG1268L3_00004		nr078639.d	CALIB_3	02/10/09	1522
22	WP040C		nr078643.d	BLANK	02/10/09	1614
23	8034BS		nr078644.d	BS	02/10/09	1627
24	8034BSD		nr078645.d	BSD	02/10/09	1639
25	982649	OWS01-020509WG	nr078647.d	SAMPLE	02/10/09	1705
26	982650	OWS02-020509WG	nr078648.d	SAMPLE	02/10/09	1718
27	982651	OWS2D-020509WG	nr078649.d	SAMPLE	02/10/09	1731
28	982652	OWS03-020509WG	nr078650.d	SAMPLE	02/10/09	1744
29	982653	MW01-020509WG0	nr078651.d	SAMPLE	02/10/09	1756

Raw Data



## GC ORGANICS INITIAL CALIBRATION SUMMARY

Instrument ID: PESTGC6.i Column ID: StxCLP1 Primary Column

## Calibration Files:

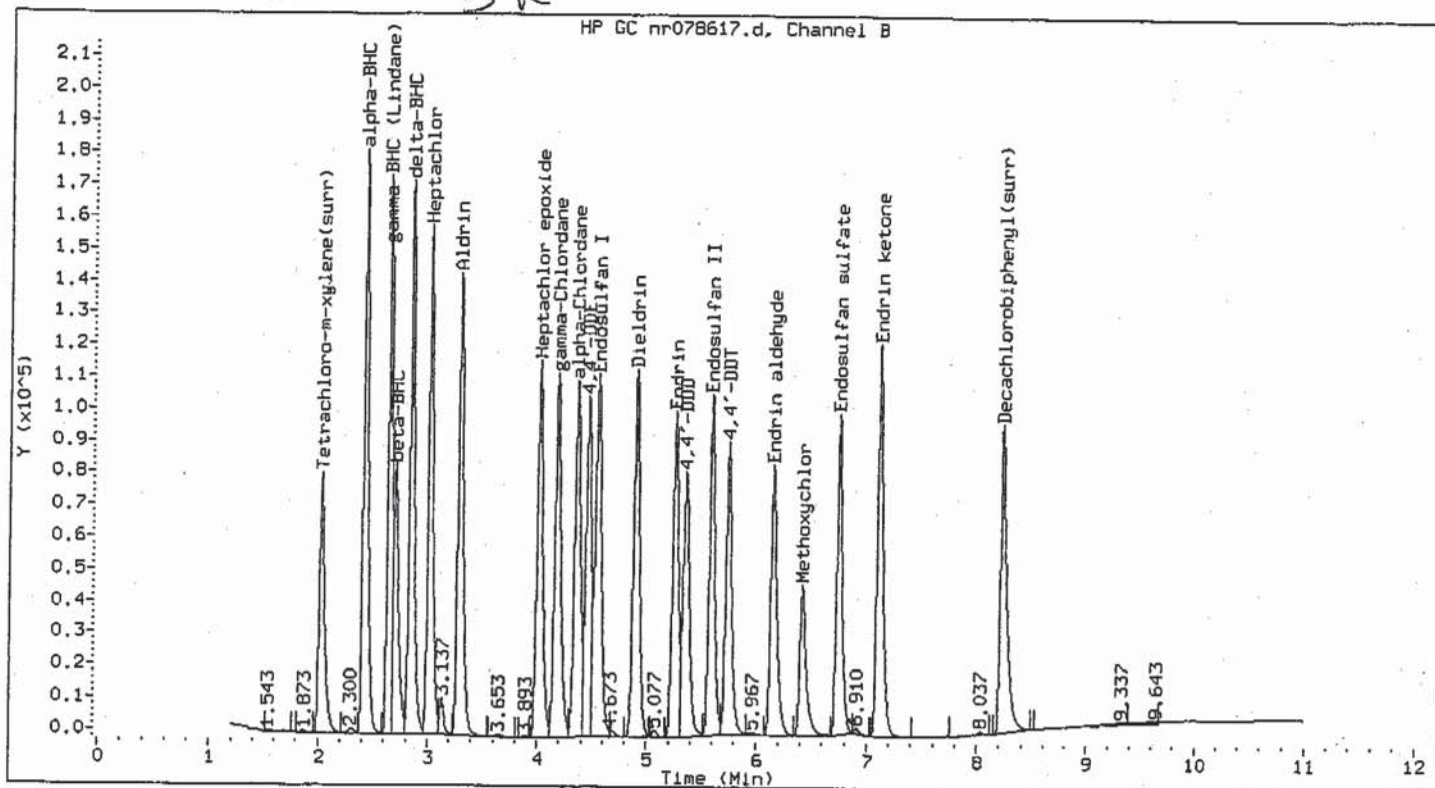
/chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/nr078618.d  
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 /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/nr078620.d  
 /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/nr078621.d

Compound	Level	Level	Level	Level	Level	Coefficients			%RSD
	1	2	3	4	5	a0	a1	a2	or R^2
Aldrin	4457.75	4942.28	4656.03	4772.90	4603.95		4686.58		3.89020
alpha-BHC	5432.50	5713.06	5309.50	5343.24	5166.91		5393.04		3.76102
beta-BHC	3331.25	3128.30	2744.22	2990.85	2678.52		2974.63		9.08029
delta-BHC	4939.00	5401.12	5057.35	5141.64	5002.40		5108.30		3.51999
gamma-BHC (Lindane)	4898.00	4743.86	4410.39	4041.58	4009.68		4420.70		9.08379
4,4'-DDD	2970.00	3537.18	3437.98	3803.66	3726.52		3495.10		9.37377
4,4'-DDE	3272.25	3913.70	3756.05	4001.34	3844.86		3757.65		7.60792
4,4'-DDT	3729.00	3539.72	3325.42	3559.08	3555.81		3541.82		4.05214
Dieldrin	3915.00	4456.54	4309.02	4503.28	4385.41		4313.89		5.44023
Endosulfan I	4465.00	4794.40	4639.73	4815.20	4670.66		4677.03		3.00845
Endosulfan II	4624.00	4083.84	3797.44	3815.82	3687.37		4001.69		9.42571
Endosulfan sulfate	4240.75	3739.52	3484.74	3561.74	3438.26		3693.00		8.85429
Endrin	3434.00	3898.34	3687.55	3865.38	3659.03		3708.90		5.02205
Endrin aldehyde	4930.50	3452.18	3163.82	3115.78	3043.91	-1.83322	0.00032	9.5248e-12	0.99993 *
Endrin ketone	4737.00	4722.44	4381.23	4331.32	4146.98		4463.79		5.78005
Heptachlor	4654.50	5179.76	4855.07	5101.90	4892.43		4936.73		4.23244
Heptachlor epoxide	4329.25	4564.52	4311.16	4397.46	4228.14		4366.12		2.89164
Methoxychlor	2485.00	2055.88	1874.28	1957.35	1897.15	-0.01053	0.00050	2.4419e-11	0.99983 *
gamma-Chlordane	4571.75	4585.24	4301.64	4397.67	4230.16		4417.32		3.59514
alpha-Chlordane	4357.50	4324.38	4014.39	3934.69	3730.66		4072.32		6.54192
Tetrachloro-m-xylene	2819.60	2936.58	2742.79	2740.85	2589.08		2772.01		5.25528
Decachlorobiphenyl(s)	3854.80	3873.14	3694.75	3691.05	3556.04		3744.68		3.98206

## Comments:

\* = %RSD exceeded maximum upper limit. Non-linear curve used for quantitation.

+ = Multi-component peak not used in calibration of compound.



Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : SGPESTL3\_00003  
Lab ID : SGPESTL3\_00003  
Inj Date : 10-FEB-2009 10:41  
Operator : 171  
Cpnd Sublist: ag-SCpestrange  
Inst ID : PESTGC6.i  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: CALIB\_3

Compounds	CONCENTRATIONS					
	RT	EXP RT	DLT RT	RESPONSE	ON-COLUMN (ug/L)	FINAL (ug/L)
Aldrin	3.287	3.287	0.000	465603	99.348	99.348
alpha-BHC	2.413	2.413	0.000	530950	98.451	98.451
beta-BHC (M)	2.700	2.700	0.000	274422	92.254	92.254
delta-BHC	2.837	2.837	0.000	505735	99.003	99.003
gamma-BHC (Lindane) (M)	2.640	2.640	0.000	441039	104.128	104.128
4,4'-DDD	5.350	5.350	0.000	343798	98.289	98.289
4,4'-DDE	4.457	4.457	0.000	375605	99.836	99.836
4,4'-DDT	5.737	5.737	0.000	332542	93.860	93.860
Dieldrin	4.893	4.893	0.000	430902	99.657	99.657



Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
-----	-----	-----	-----	-----	-----	-----
Endosulfan I (M)	4.547	4.547	0.000	463973	99.032	99.032
Endosulfan II	5.580	5.580	0.000	379744	97.599	97.599
Endosulfan sulfate	6.740	6.740	0.000	348474	96.597	96.597
Endrin	5.250	5.250	0.000	368755	99.388	99.388
Endrin aldehyde	6.147	6.147	0.000	316382	98.881	98.881
Endrin ketone	7.103	7.103	0.000	438123	98.213	98.213
Heptachlor	3.013	3.013	0.000	485507	98.346	98.346
Heptachlor epoxide	4.010	4.010	0.000	431116	98.621	98.621
Methoxychlor	6.413	6.413	0.000	187428	95.219	95.219
gamma-Chlordane	4.173	4.173	0.000	430164	97.140	97.140
alpha-Chlordane	4.353	4.353	0.000	401439	98.316	98.316
Tetrachloro-m-xylene(surr)	2.027	2.027	0.000	274279	98.946	98.946
Decachlorobiphenyl(surr)	8.217	8.217	0.000	369475	99.388	99.388
-----	-----	-----	-----	-----	-----	-----

COMMENTS:

M - Compound response manually integrated.

## GC ORGANICS INITIAL CALIBRATION SUMMARY

Instrument ID: PESTGC6.i Column ID: StxCLP1 Primary Column

## Calibration Files:

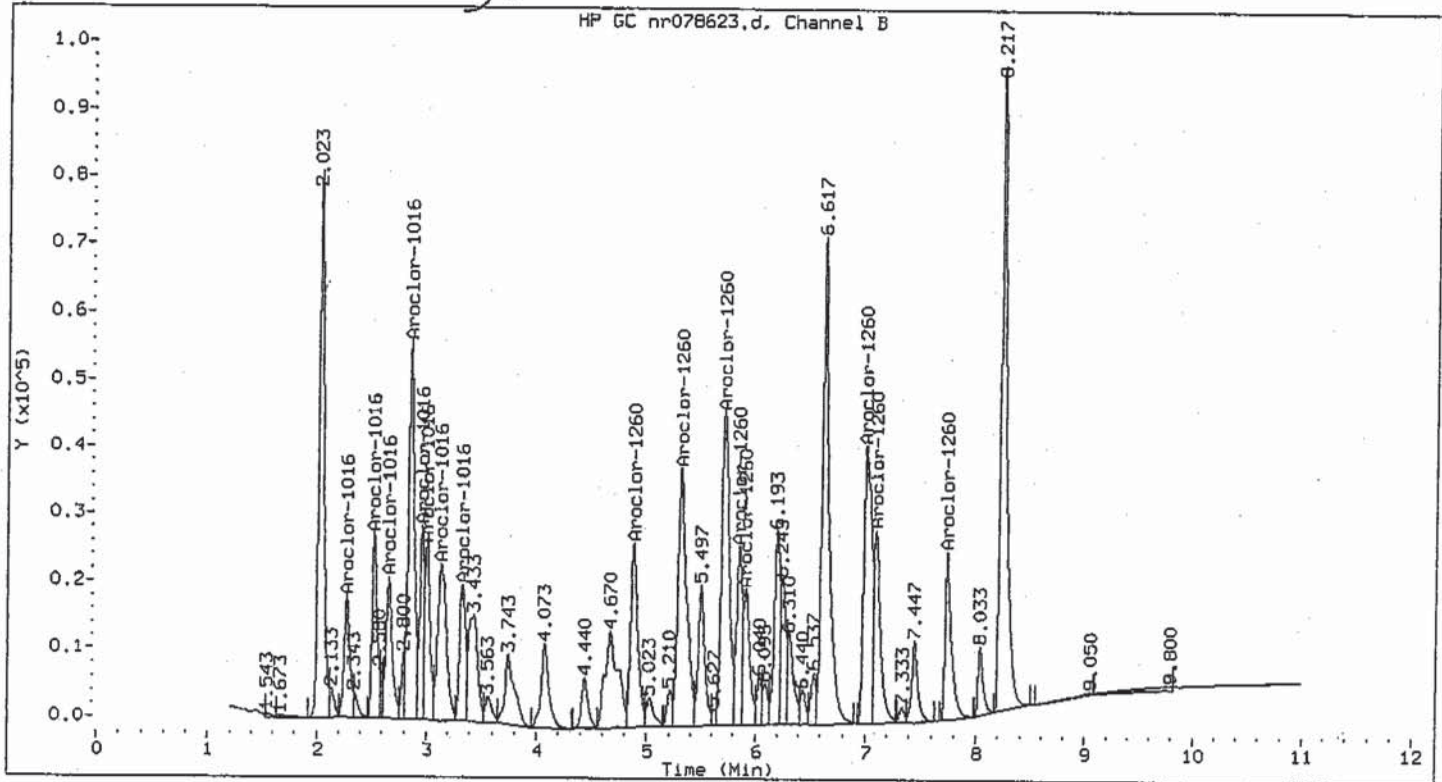
/chem1/PESTGC6.i/608/rear/feb09/02-10-09ical/10feb09a.b/nr078624.d  
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 /chem1/PESTGC6.i/608/rear/feb09/02-10-09ical/10feb09a.b/nr078627.d

Compound		Level	Level	Level	Level	Level	Coefficients			%RSD or R <sup>2</sup>
		1	2	3	4	5	a0	a1	a2	
Aroclor-1016	1	77.25	74.11	68.06	65.44	62.43	-12.33562	0.01381	1.4823e-08	0.99982 *
	2	111.83	98.63	89.45	86.06	80.17	-16.35779	0.01014	1.2121e-08	0.99979
	3	98.56	87.20	84.62	78.64	73.64	-7.79970	0.01082	1.5344e-08	0.99980
	4	239.12	221.24	218.44	210.21	199.68	-2.29916	0.00431	1.4096e-09	0.99996
	5	88.39	83.26	77.19	73.69	73.64	-22.43303	0.01307	3.6888e-09	0.99941
	6	86.86	85.78	90.34	89.90	82.55	23.40954	0.00981	1.0333e-08	0.99926
	7	248.73	151.96	132.19	129.05	116.36	-46.21322	0.00648	7.8972e-09	0.99678
	8	82.00	74.16	76.43	72.77	68.51	4.54795	0.01216	1.4029e-08	0.99978
Aroclor-1260	1	142.19	122.90	120.31	121.66	106.85	12.50626	0.00684	8.9674e-09	0.99849 *
	2	249.25	217.35	217.03	216.49	193.78	10.96224	0.00393	2.4277e-09	0.99909
	3	260.82	229.84	229.71	235.72	215.52	9.14906	0.00388	1.3381e-09	0.99900
	4	114.38	90.82	93.77	96.29	87.87	7.06907	0.00954	7.9129e-09	0.99854
	5	103.00	94.11	86.81	84.19	72.87	9.42800	0.00886	2.5982e-08	0.99931
	6	211.97	188.82	195.25	195.25	179.32	12.82873	0.00459	2.0909e-09	0.99930
	7	142.38	127.89	131.93	133.30	125.15	9.25078	0.00703	2.8813e-09	0.99949
	8	102.16	92.43	97.08	96.59	91.94	8.93383	0.00975	4.6154e-09	0.99966

## Comments:

\* = %RSD exceeded maximum upper limit. Non-linear curve used for quantitation.

+ = Multi-component peak not used in calibration of compound.



Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : SG1660L3\_00004  
Lab ID : SG1660L3\_00004  
Inj Date : 10-FEB-2009 11:58  
Operator : 171  
Cpnd Sublist: AR16600

Inst ID : PESTGC6.i  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: CALIB\_3

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Aroclor-1016	(M)	2.270	2.270	0.000	68062	996.515
(2)	2.520	2.520	0.000	89450	987.960	987.960
(3)	2.657	2.657	0.000	84621	1017.488	1017.488
(4)	2.850	2.850	0.000	218442	1006.389	1006.389
(5)	2.960	2.960	0.000	77191	1008.447	1008.447
(6)	3.003	3.003	0.000	90345	994.084	994.084
(7)	3.133	3.133	0.000	132189	948.244	948.244
(8)	3.323	3.323	0.000	76428	1015.729	1015.729

Average of peak concentrations:

1000.00

Aroclor-1260	(M)	4.877	4.877	0.000	120310	965.638
(2)	5.307	5.307	0.000	217035	978.887	978.887
(3)	5.703	5.703	0.000	229711	970.214	970.214
(4)	5.850	5.850	0.000	93769	971.403	971.403
(5)	5.910	5.910	0.000	86815	974.564	974.564
(6)	6.997	6.997	0.000	195255	987.876	987.876

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
-----	-----	-----	-----	-----	-----	-----
(7)	7.093	7.093	0.000	131934	987.011	987.011
(8)	7.737	7.737	0.000	97079	999.015	999.015

Average of peak concentrations:

980.00

COMMENTS:

M - Compound response manually integrated.



## GC ORGANICS INITIAL CALIBRATION SUMMARY

Instrument ID: PESTGC6.i Column ID: StxCPL1 Primary Column

## Calibration Files:

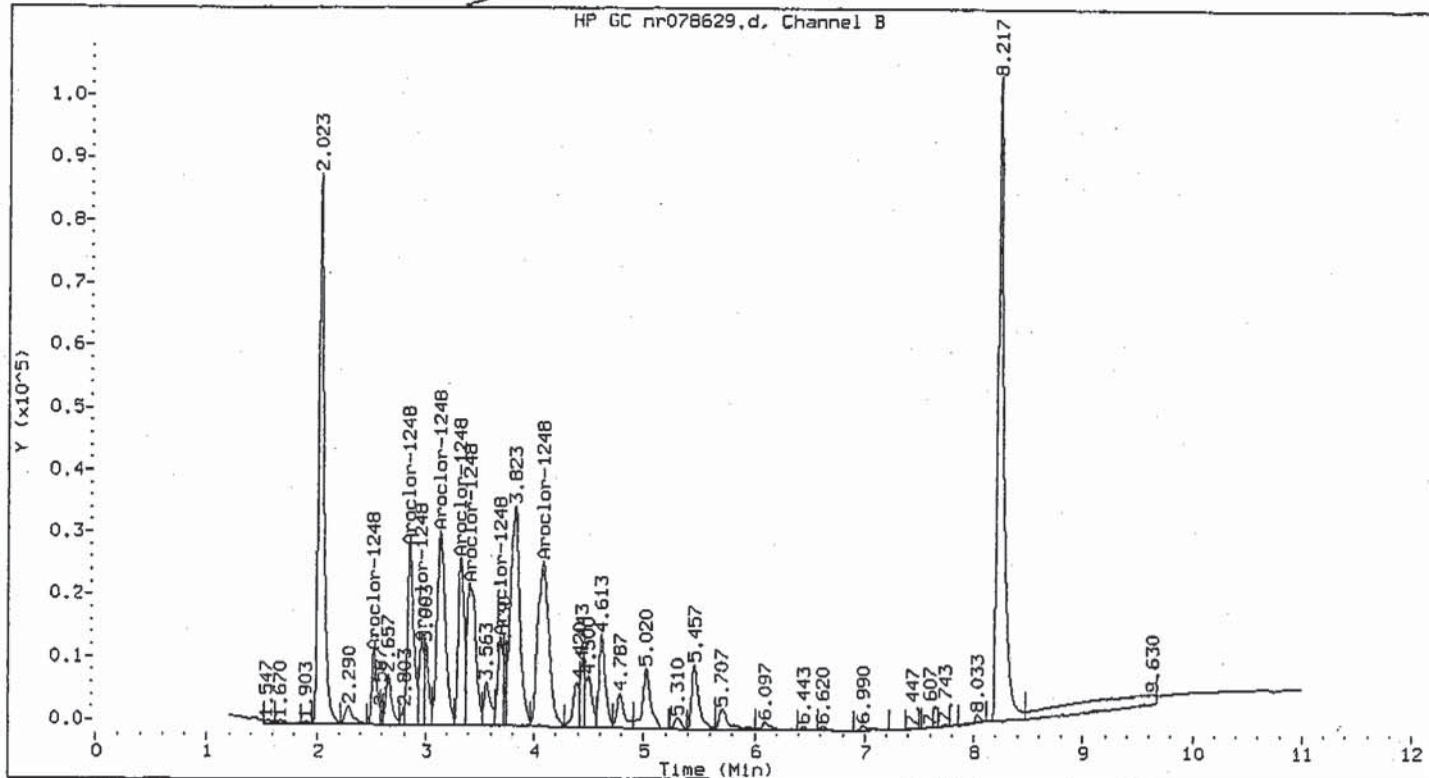
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 /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/nr078629.d  
 /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/nr078632.d  
 /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/nr078633.d

Compound	Level	Level	Level	Level	Level	Coefficients			%RSD or R^2	
						a0	a1	a2		
Aroclor-1248	1	43.06	42.45	39.52	35.97	31.93	8.49700	0.01982	1.4273e-07	0.99989
	2	119.82	118.67	115.97	109.38	101.09	6.65118	0.00764	8.7955e-09	0.99994
	3	40.16	38.87	38.75	35.98	33.41	6.28158	0.02307	8.142e-08	0.99979
	4	204.24	193.74	169.11	149.55	136.71	-13.02280	0.00487	7.3697e-09	0.99908
	5	101.98	100.49	96.90	94.00	86.68	6.08182	0.00916	1.0755e-08	0.99994
	6	124.84	126.63	128.41	123.80	115.99	12.67205	0.00711	5.0257e-09	0.99986
	7	41.69	46.49	45.16	46.20	41.54	25.68079	0.01870	4.793e-08	0.99885
	8	174.56	175.24	184.97	175.58	168.62	12.52883	0.00514	1.7939e-09	0.99967

## Comments:

\* = %RSD exceeded maximum upper limit. Non-linear curve used for quantitation.

+ = Multi-component peak not used in calibration of compound.



Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
 Sample Info : SG1248L3\_00004  
 Lab ID : SG1248L3\_00004  
 Inj Date : 10-FEB-2009 13:15  
 Operator : 171  
 Cpnd Sublist: AR12480NS

Inst ID : PESTGC6.i  
 Dil Factor : 1  
 Sample Matrix : WATER  
 Sample Type: CALIB\_3

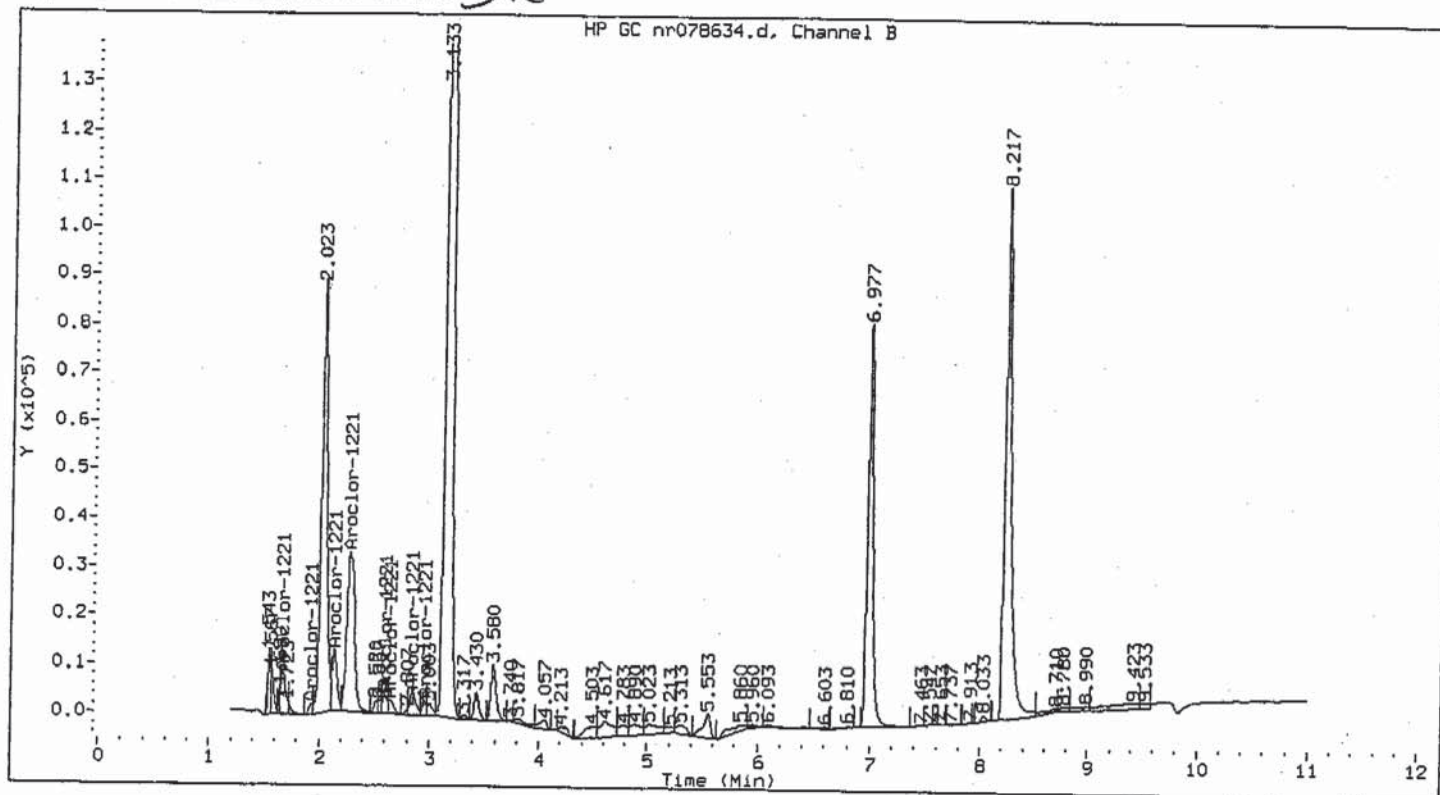
Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Aroclor-1248 (M)	2.517	2.517	0.000	39516	1014.746	1014.746
(2)	2.847	2.847	0.000	115967	1011.044	1011.044
(3)	2.963	2.963	0.000	38748	1022.365	1022.365
(4)	3.133	3.133	0.000	169114	1021.922	1021.922
(5)	3.320	3.320	0.000	96897	994.809	994.809
(6)	3.403	3.403	0.000	128405	1008.342	1008.342
(7)	3.690	3.690	0.000	45164	967.843	967.843
(8)	4.080	4.080	0.000	184974	1025.257	1025.257

Average of peak concentrations:

1000.00

COMMENTS:

M - Compound response manually integrated.



Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : SG1221L3\_00006  
Lab ID : SG1221L3\_00006  
Inj Date : 10-FEB-2009 14:19  
Operator : 171  
Cpnd Sublist: AR12210

Inst ID : PESTGC6.i  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: CALIB\_3

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Aroclor-1221	(M)	1.670	1.670	0.000	26367	940.082
(2)	1.930	1.930	0.000	4764	908.797	908.797
(3)	2.137	2.137	0.000	41251	1137.080	1137.080
(4)	2.270	2.270	0.000	163236	1312.854	1312.854
(5)	2.603	2.603	0.000	10433	1260.779	1260.779
(6)	2.650	2.650	0.000	10978	1050.397	1050.397
(7)	2.847	2.847	0.000	18970	1055.639	1055.639
(8)	2.957	2.957	0.000	7356	1033.569	1033.569

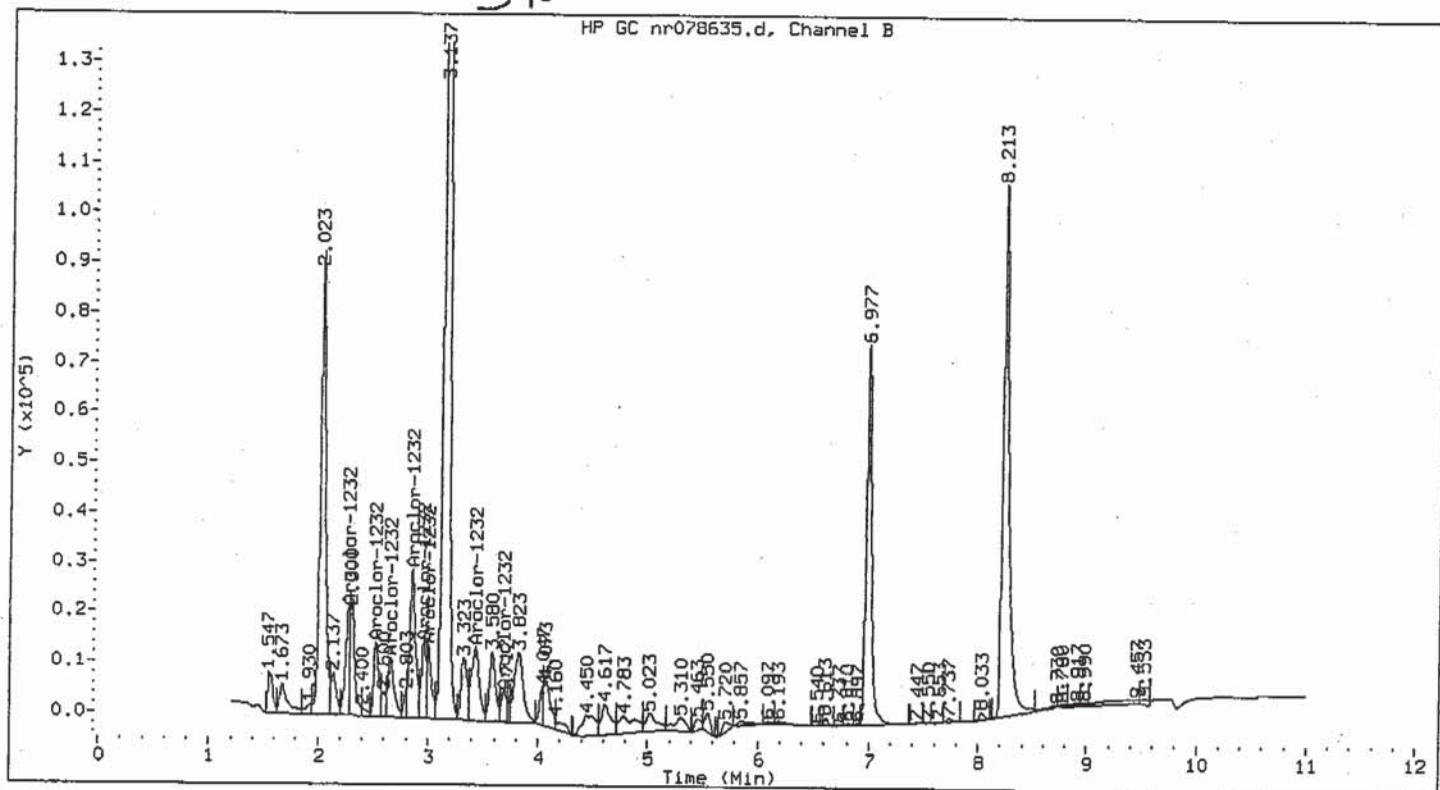
Average of peak concentrations:

1100.00

COMMENTS:

M - Compound response manually integrated.





Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : SG1232L3\_00004  
Lab ID : SG1232L3\_00004  
Inj Date : 10-FEB-2009 14:31  
Operator : 171  
Cpnd Sublist: AR12320

Inst ID : PESTGC6.1  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: CALIB\_3

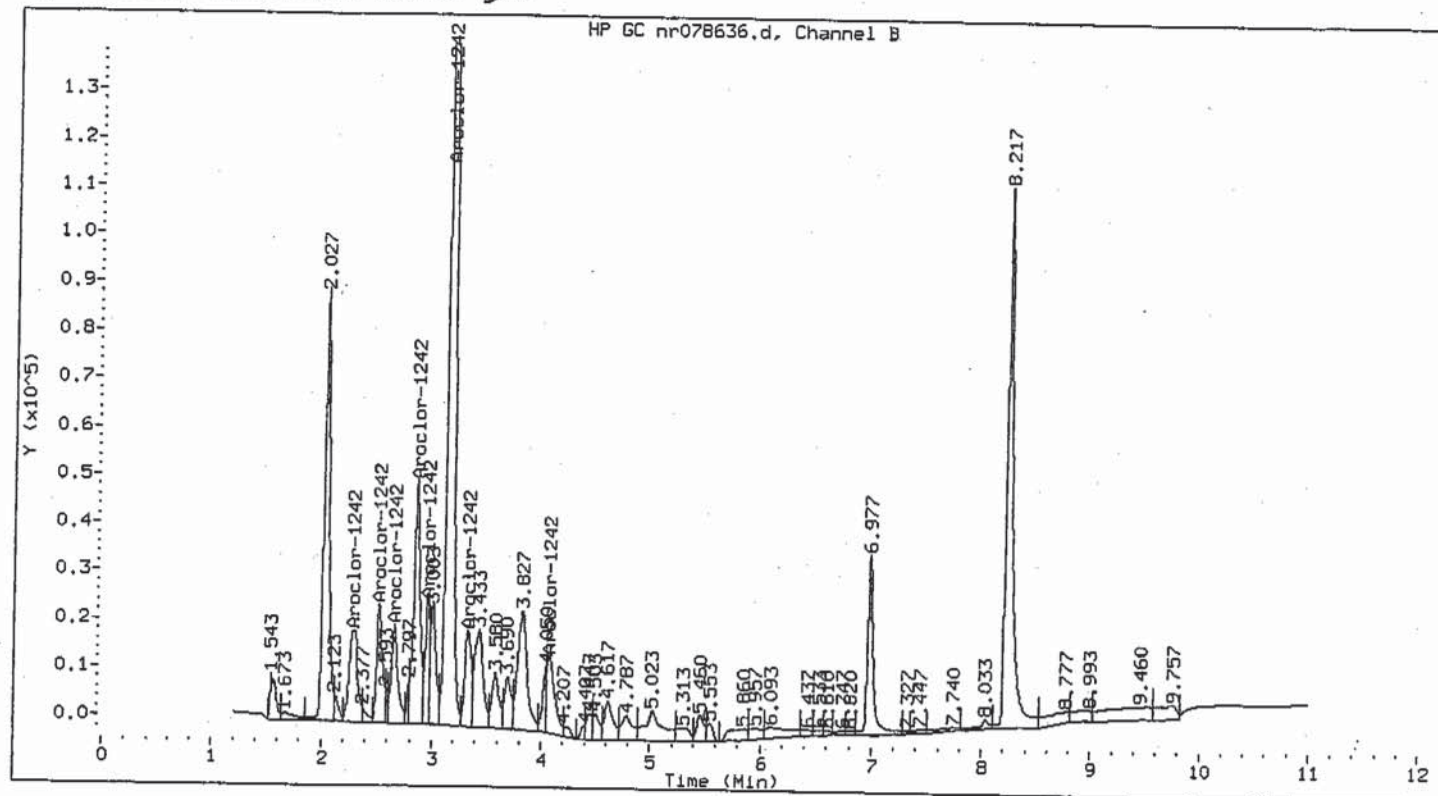
Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Aroclor-1232	(M) 2.270	2.270	0.000	53718	907.596	907.596
(2)	2.520	2.520	0.000	49969	1017.445	1017.445
(3)	2.657	2.657	0.000	48164	1045.437	1045.437
(4)	2.850	2.850	0.000	115726	1058.708	1058.708
(5)	2.957	2.957	0.000	44257	1085.358	1085.358
(6)	3.007	3.007	0.000	48031	1051.115	1051.115
(7)	3.433	3.433	0.000	73227	1599.160	1599.160
(8)	3.687	3.687	0.000	19960	1177.401	1177.401

Average of peak concentrations:

1100.00

COMMENTS:

M - Compound response manually integrated.



Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : SG1242L3\_00004  
Lab ID : SG1242L3\_00004  
Inj Date : 10-FEB-2009 14:44  
Operator : 171  
Cpnd Sublist: AR12420

Inst ID : PESTGC6.i  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: CALIB\_3

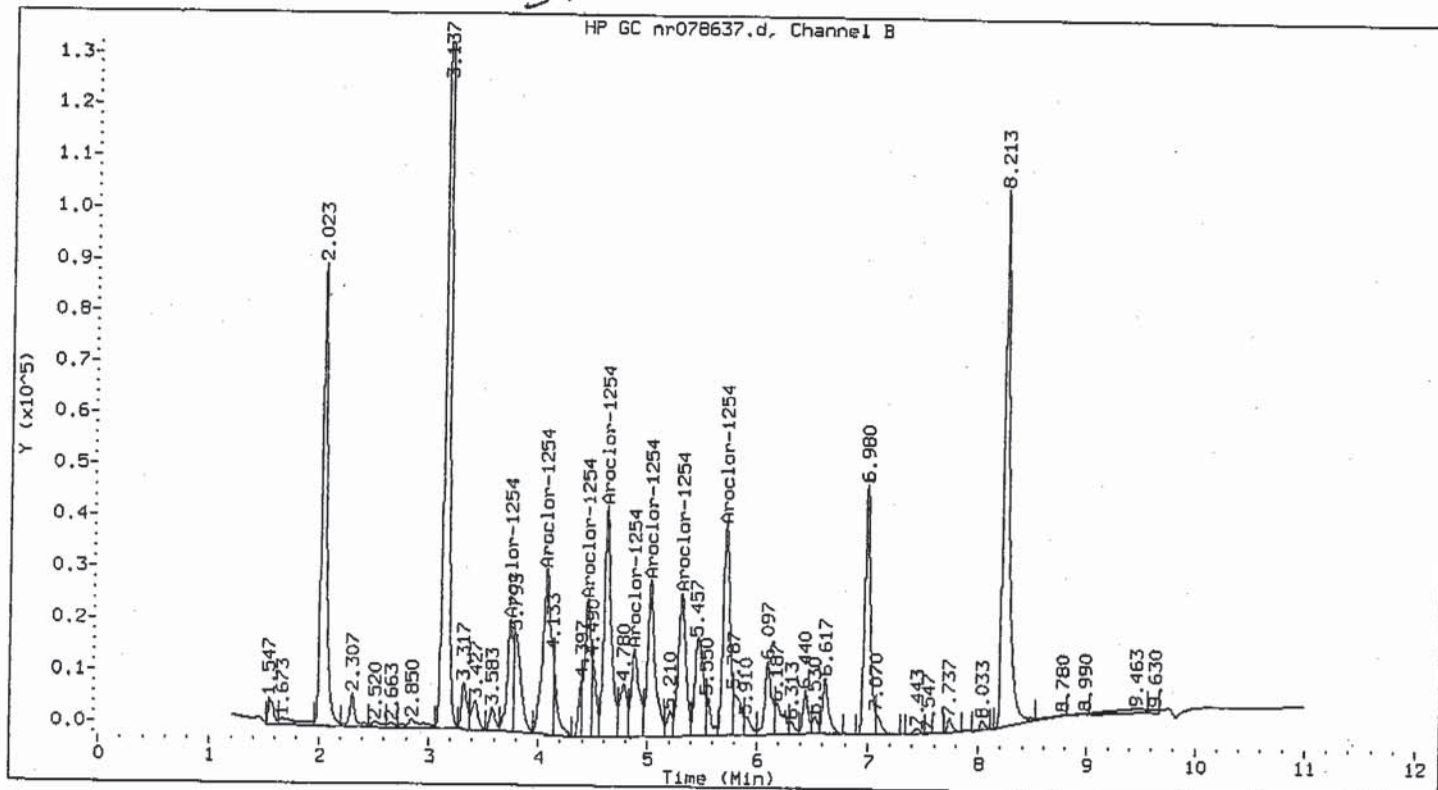
Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Aroclor-1242	(M)					
(2)	2.290	2.290	0.000	101344	1000.000	1000.000
(3)	2.520	2.520	0.000	88220	1000.000	1000.000
(4)	2.657	2.657	0.000	85204	1000.000	1000.000
(5)	2.850	2.850	0.000	203487	1000.000	1000.000
(6)	2.957	2.957	0.000	75489	1000.000	1000.000
(7)	3.137	3.137	0.000	1150502	1000.000	1000.000
(8)	3.323	3.323	0.000	78109	1000.000	1000.000
	4.077	4.077	0.000	81411	1000.000	1000.000

Average of peak concentrations:

1000.00

COMMENTS:

M - Compound response manually integrated.



Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
 Sample Info : SG1254L3\_00004  
 Lab ID : SG1254L3\_00004  
 Inj Date : 10-FEB-2009 14:57  
 Operator : 171  
 Cpnd Sublist: AR12540  
 Inst ID : PESTGC6.i  
 Dil Factor : 1  
 Sample Matrix : WATER  
 Sample Type: CALIB\_3

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Aroclor-1254	(M) 3.743	3.743	0.000	82449	1000.000	1000.000
(2)	4.067	4.067	0.000	169847	1000.000	1000.000
(3)	4.443	4.443	0.000	110824	1000.000	1000.000
(4)	4.613	4.613	0.000	211468	1000.000	1000.000
(5)	4.873	4.873	0.000	90049	1000.000	1000.000
(6)	5.020	5.020	0.000	153194	1000.000	1000.000
(7)	5.307	5.307	0.000	137673	1000.000	1000.000
(8)	5.703	5.703	0.000	180738	1000.000	1000.000

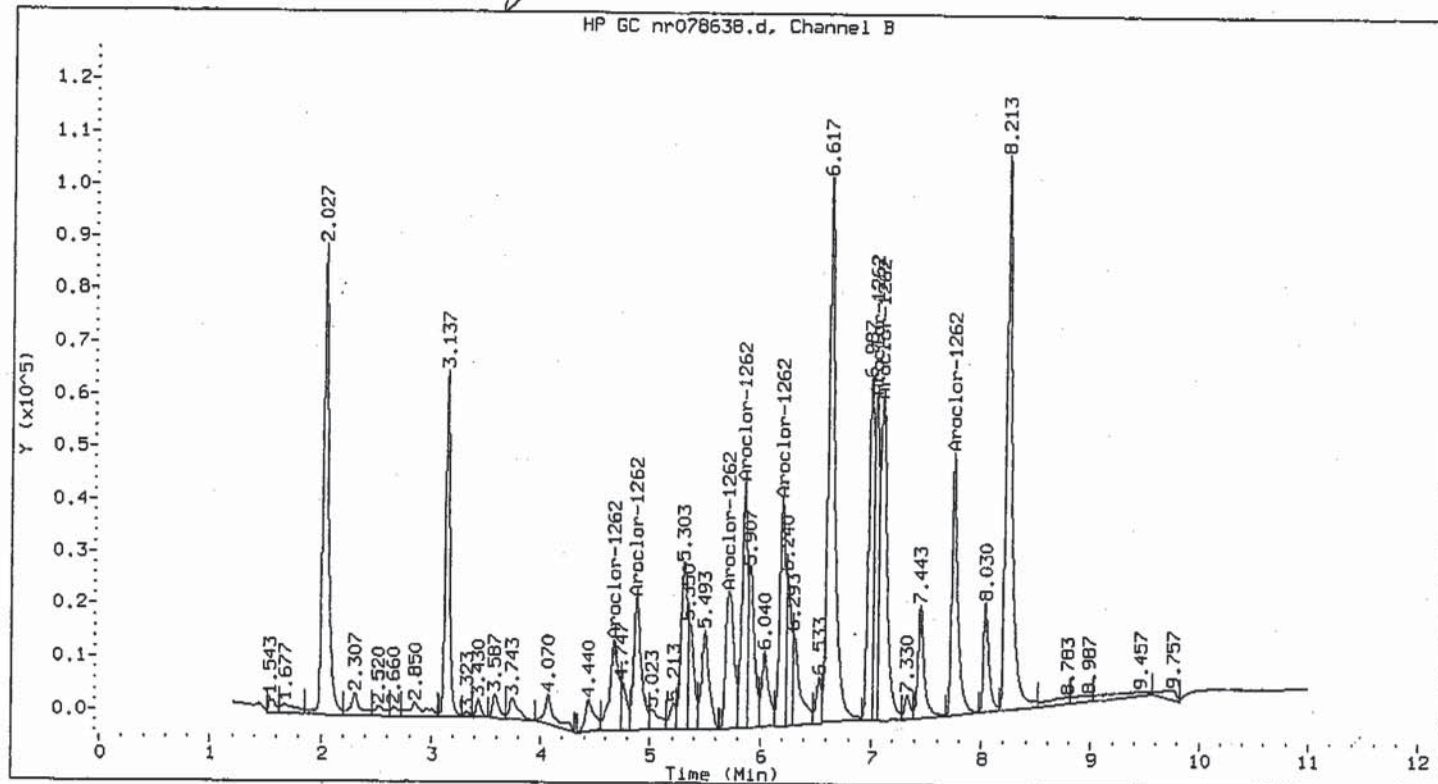
Average of peak concentrations:

1000.00

COMMENTS:

M - Compound response manually integrated.





Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : SG1262L3\_00005  
Lab ID : SG1262L3\_00005  
Inj Date : 10-FEB-2009 15:10  
Operator : 171  
Cpnd Sublist: AR12620

Inst ID : PESTGC6.i  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: CALIB\_3

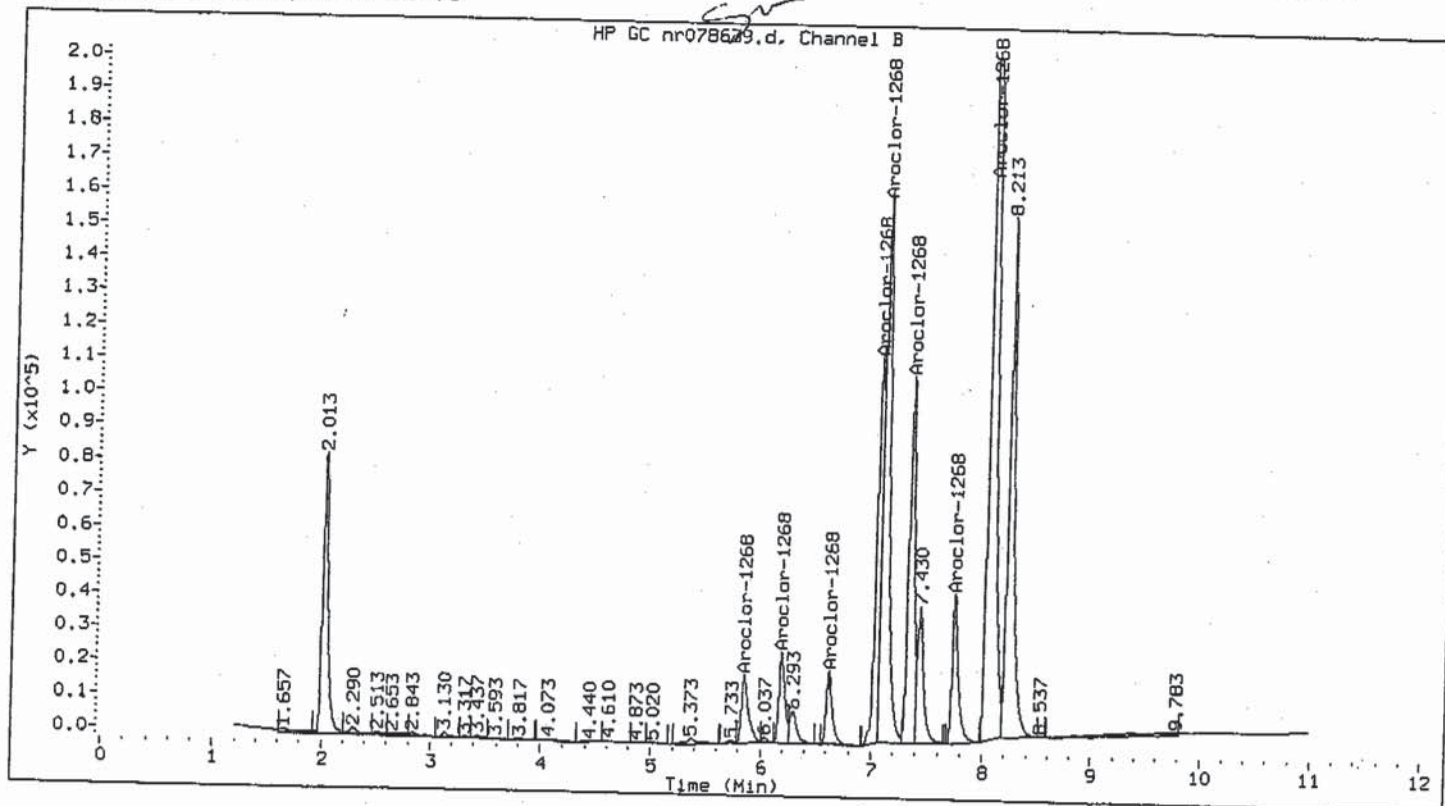
Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Aroclor-1262	(M)	4.677	4.677	0.000	95086	1000.000
(2)	4.877	4.877	0.000	122152	1000.000	1000.000
(3)	5.710	5.710	0.000	139090	1000.000	1000.000
(4)	5.850	5.850	0.000	163568	1000.000	1000.000
(5)	6.193	6.193	0.000	160597	1000.000	1000.000
(6)	7.033	7.033	0.000	157514	1000.000	1000.000
(7)	7.090	7.090	0.000	299727	1000.000	1000.000
(8)	7.733	7.733	0.000	194589	1000.000	1000.000

Average of peak concentrations:

1000.00

COMMENTS:

M - Compound response manually integrated.



Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : SG1268L3\_00004  
Lab ID : SG1268L3\_00004  
Inj Date : 10-FEB-2009 15:22  
Operator : 171  
Cpnd Sublist: AR12680

Inst ID : PESTGC6.i  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: CALIB\_3

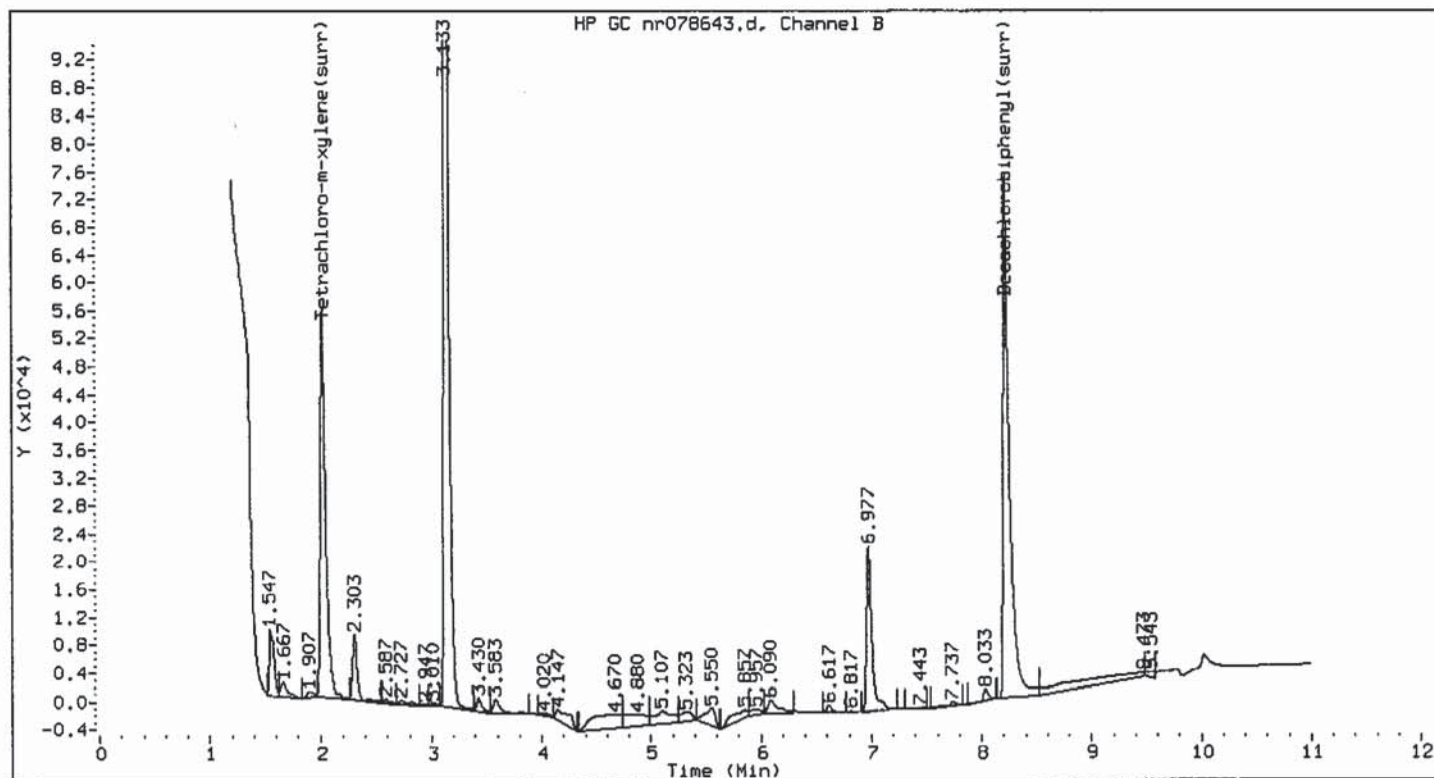
Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Aroclor-1268	(M)	5.847	5.847	0.000	89319	1000.000
(2)	6.183	6.183	0.000	105058	1000.000	1000.000
(3)	6.617	6.617	0.000	82338	1000.000	1000.000
(4)	7.040	7.040	0.000	333591	1000.000	1000.000
(5)	7.087	7.087	0.000	678919	1000.000	1000.000
(6)	7.330	7.330	0.000	375533	1000.000	1000.000
(7)	7.737	7.737	0.000	170869	1000.000	1000.000
(8)	8.030	8.030	0.000	1097114	1000.000	1000.000

Average of peak concentrations:

1000.00

COMMENTS:

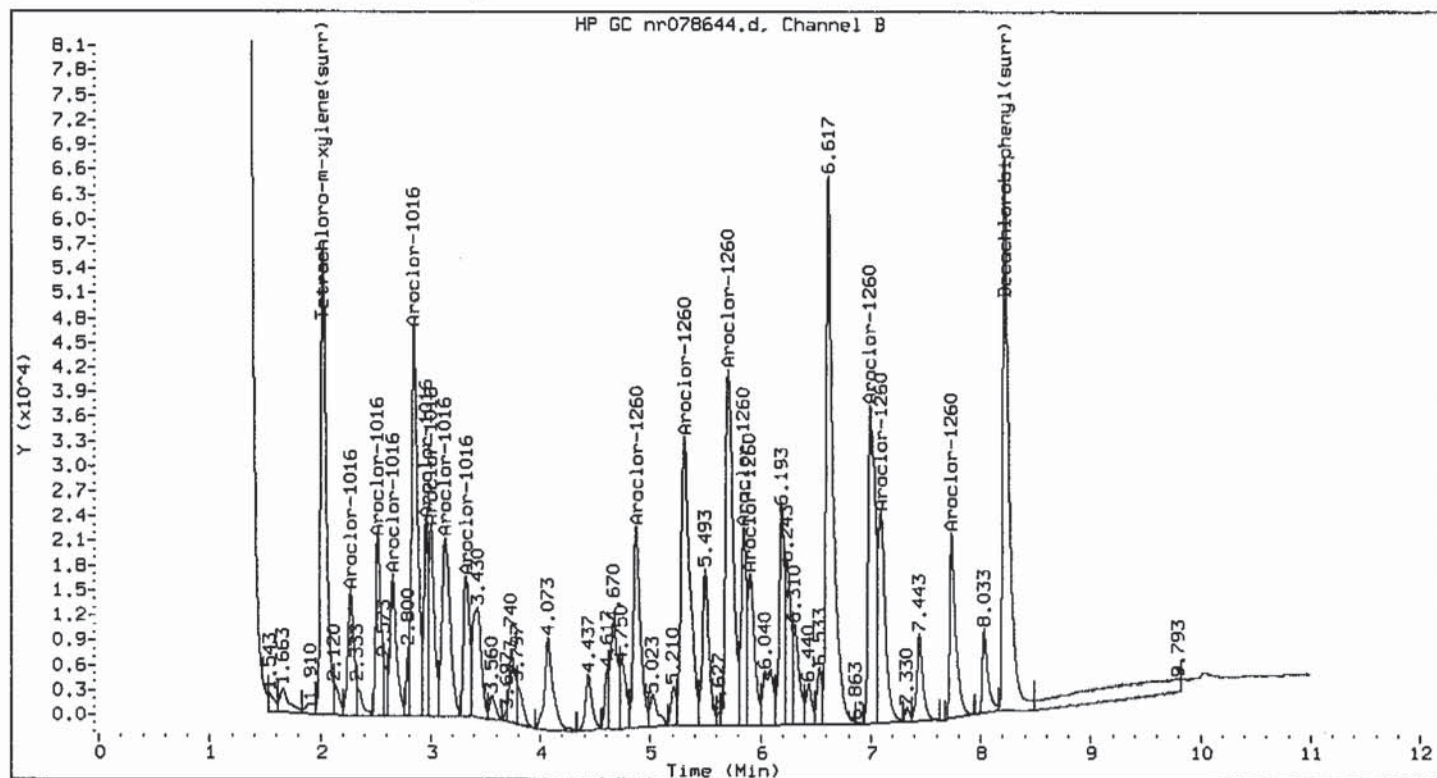
M - Compound response manually integrated.



Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
 Sample Info : WP040C;MB91675  
 Lab ID : WP040C  
 Inj Date : 10-FEB-2009 16:14  
 Operator : 171  
 Cpnd Sublist: PCB+  
 Inst ID : PESTGC6.i  
 Dil Factor : 1  
 Sample Matrix : WATER  
 Sample Type: BLANK

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Tetrachloro-m-xylene(surr)	2.023	2.027	0.003	183528	66.207	0.331
Decachlorobiphenyl(surr)	8.217	8.217	0.000	290925	77.417	0.387





Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : 8034BS;BS72870  
Lab ID : 8034BS  
Inj Date : 10-FEB-2009 16:27  
Operator : 171 *SW*  
Cpnd Sublist: PCB+  
Inst ID : PESTGC6.i  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: BS

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Aroclor-1016	(M)	2.270	2.270	0.000	59925	868.676
(2)	2.517	2.520	0.003	72501	782.767	3.914
(3)	2.653	2.657	0.004	68585	806.317	4.032
(4)	2.847	2.850	0.003	185883	847.511	4.238
(5)	2.957	2.960	0.003	68903	895.655	4.478
(6)	3.003	3.003	0.000	75634	824.531	4.123
(7)	3.133	3.133	0.000	115776	809.763	4.049
(8)	3.323	3.323	0.000	61869	810.469	4.052

Average of peak concentrations: 4.20

Aroclor-1260	(M)	4.877	4.877	0.000	108936	864.418
(2)	5.307	5.307	0.000	196141	875.755	4.379
(3)	5.703	5.703	0.000	208112	873.833	4.369
(4)	5.850	5.850	0.000	84003	864.477	4.322
(5)	5.910	5.910	0.000	77023	846.108	4.231
(6)	6.997	6.997	0.000	176047	884.887	4.424



Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
-----	-----	-----	-----	-----	-----	-----
(7)	7.093	7.093	0.000	117720	876.850	4.384
(8)	7.737	7.737	0.000	83805	858.503	4.293

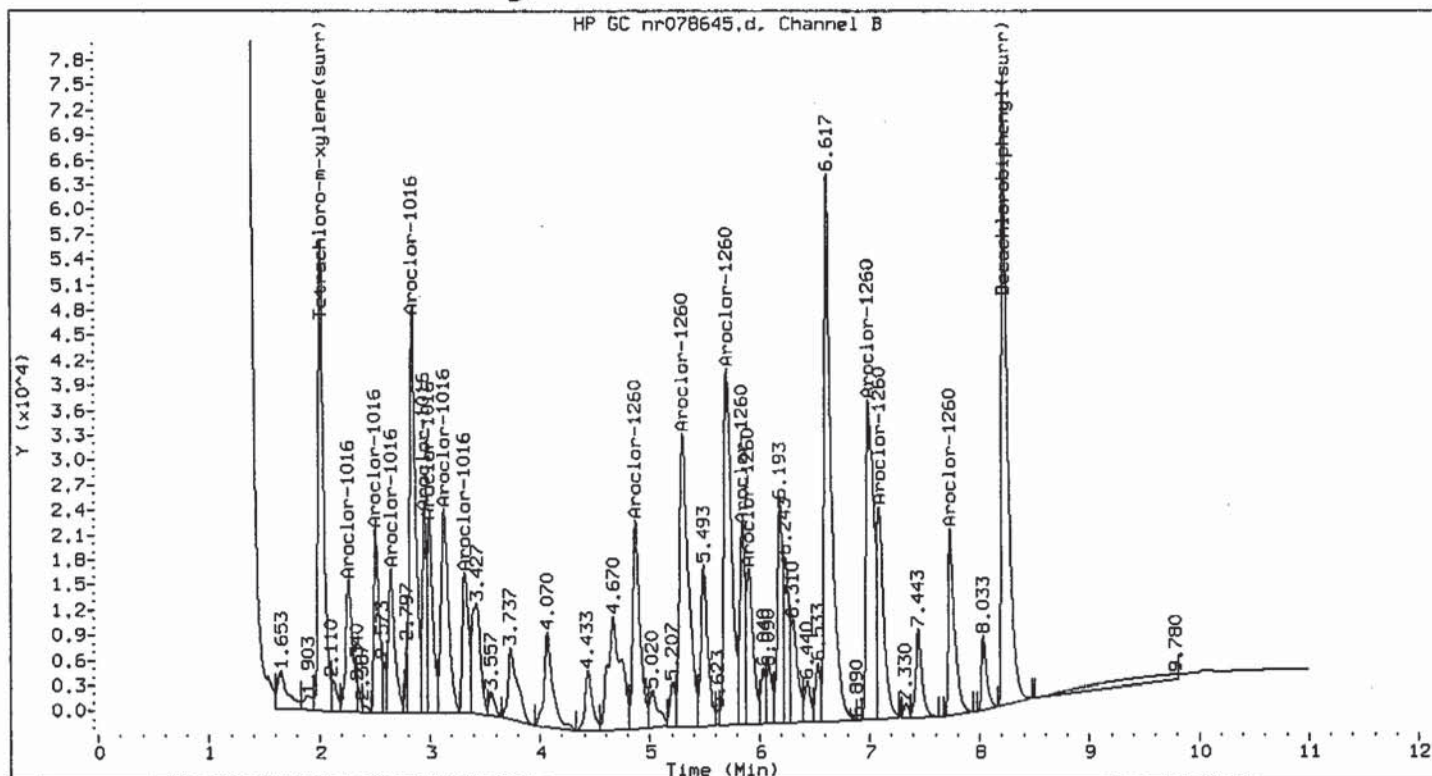
Average of peak concentrations:

4.30

Tetrachloro-m-xylene(surr)	(M)	2.023	2.027	0.003	201899	72.835	0.364
Decachlorobiphenyl(surr)		8.217	8.217	0.000	261007	69.164	0.346

COMMENTS:

M - Compound response manually integrated.



Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : 8034BSD;  
Lab ID : 8034BSD  
Inj Date : 10-FEB-2009 16:39  
Operator : 171  
Cpnd Sublist: PCB+

Inst ID : PESTGC6.i  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: BSD

						CONCENTRATIONS	
						ON-COLUMN	FINAL
Compounds		RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
=====							
Aroclor-1016	(M)	2.267	2.270	0.003	65159	950.681	4.753
(2)		2.513	2.520	0.007	73476	794.382	3.972
(3)		2.650	2.657	0.007	67876	797.162	3.986
(4)		2.843	2.850	0.007	184915	842.833	4.214
(5)		2.953	2.960	0.007	68278	887.170	4.436
(6)		3.000	3.003	0.003	76686	836.507	4.183
(7)		3.130	3.133	0.003	119884	844.024	4.220
(8)		3.320	3.323	0.003	62228	815.459	4.077

Average of peak concentrations:

4.20

Aroclor-1260	(M)	4.873	4.877	0.003	114072	909.837	4.549
(2)		5.303	5.307	0.003	203306	910.882	4.554
(3)		5.703	5.703	0.000	211404	888.443	4.442
(4)		5.847	5.850	0.003	86523	891.923	4.460
(5)		5.910	5.910	0.000	78554	865.864	4.329
(6)		6.997	6.997	0.000	179572	903.671	4.518

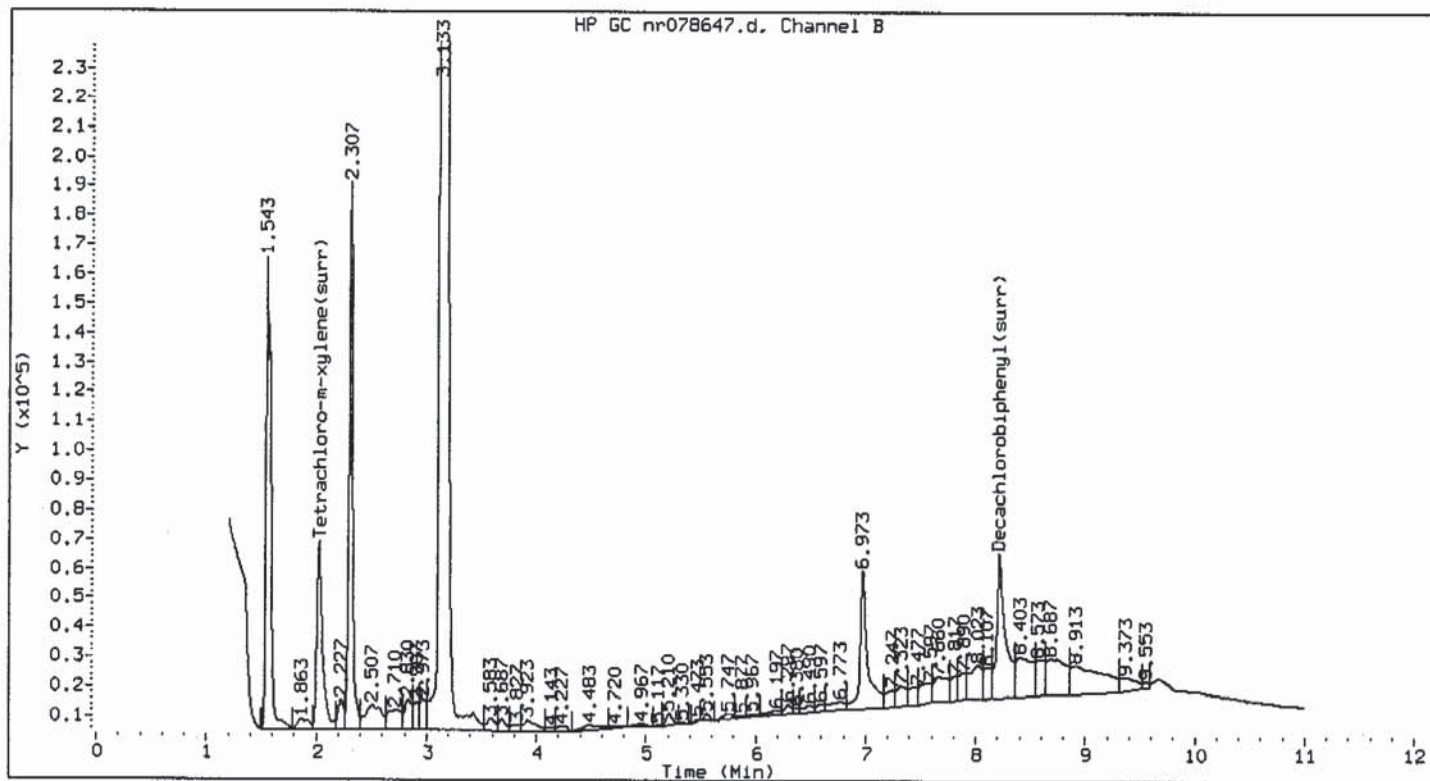
Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
*****	*****	*****	*****	*****	*****	*****
(7)	7.093	7.093	0.000	113734	846.167	4.231
(8)	7.737	7.737	0.000	85412	875.427	4.377

Average of peak concentrations: 4.40

Tetrachloro-m-xylene(surr)	(M)	2.017	2.027	0.010	197306	71.178	0.356
Decachlorobiphenyl(surr)		8.217	8.217	0.000	281709	74.868	0.374

COMMENTS:

M - Compound response manually integrated.



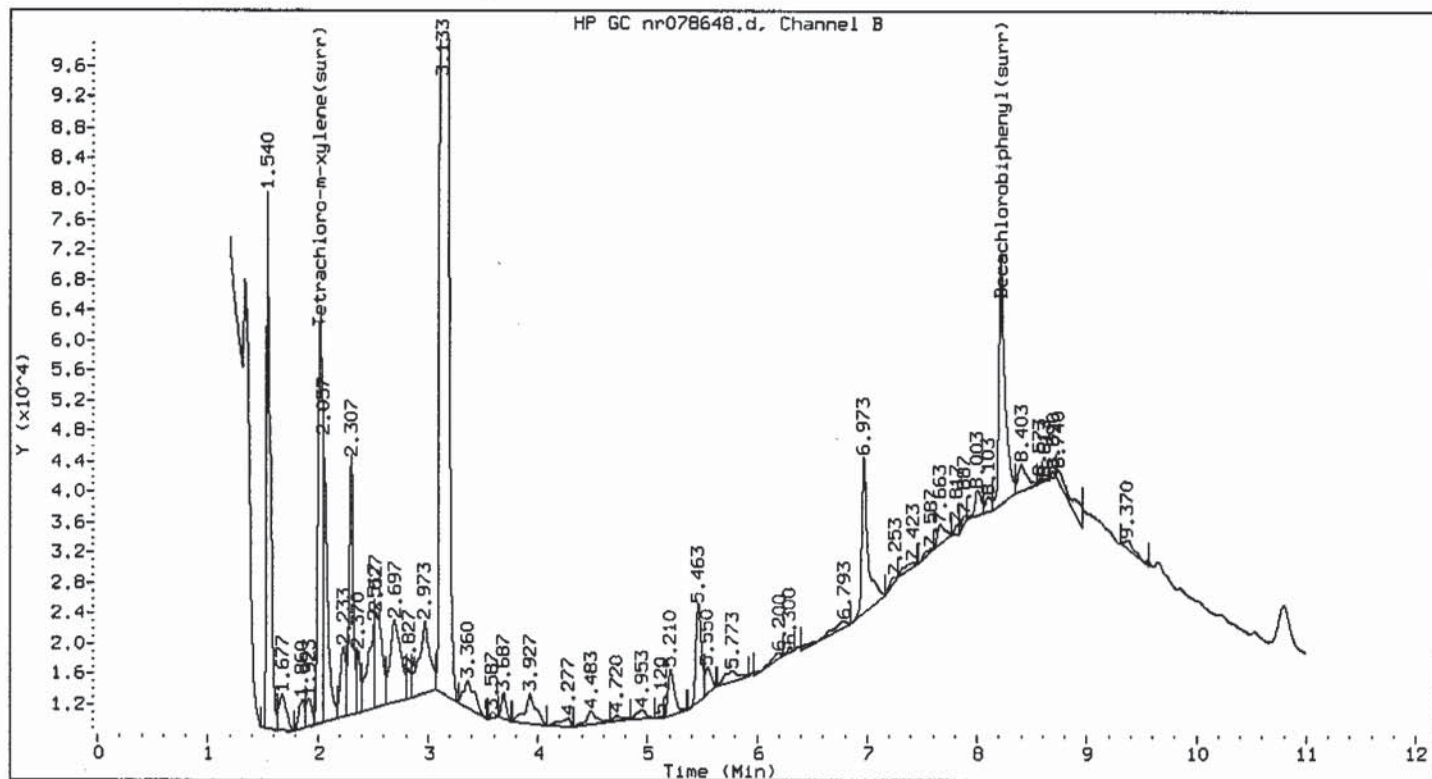
Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : 982649;4732212  
Lab ID : 982649  
Inj Date : 10-FEB-2009 17:05  
Operator : 171  
Cpnd Sublist: PCB+

Inst ID : PESTGC6.i  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Tetrachloro-m-xylene(surr)	2.023	2.027	0.003	233584	84.265	0.434
Decachlorobiphenyl(surr)	8.213	8.217	0.003	271406	72.026	0.371



SV

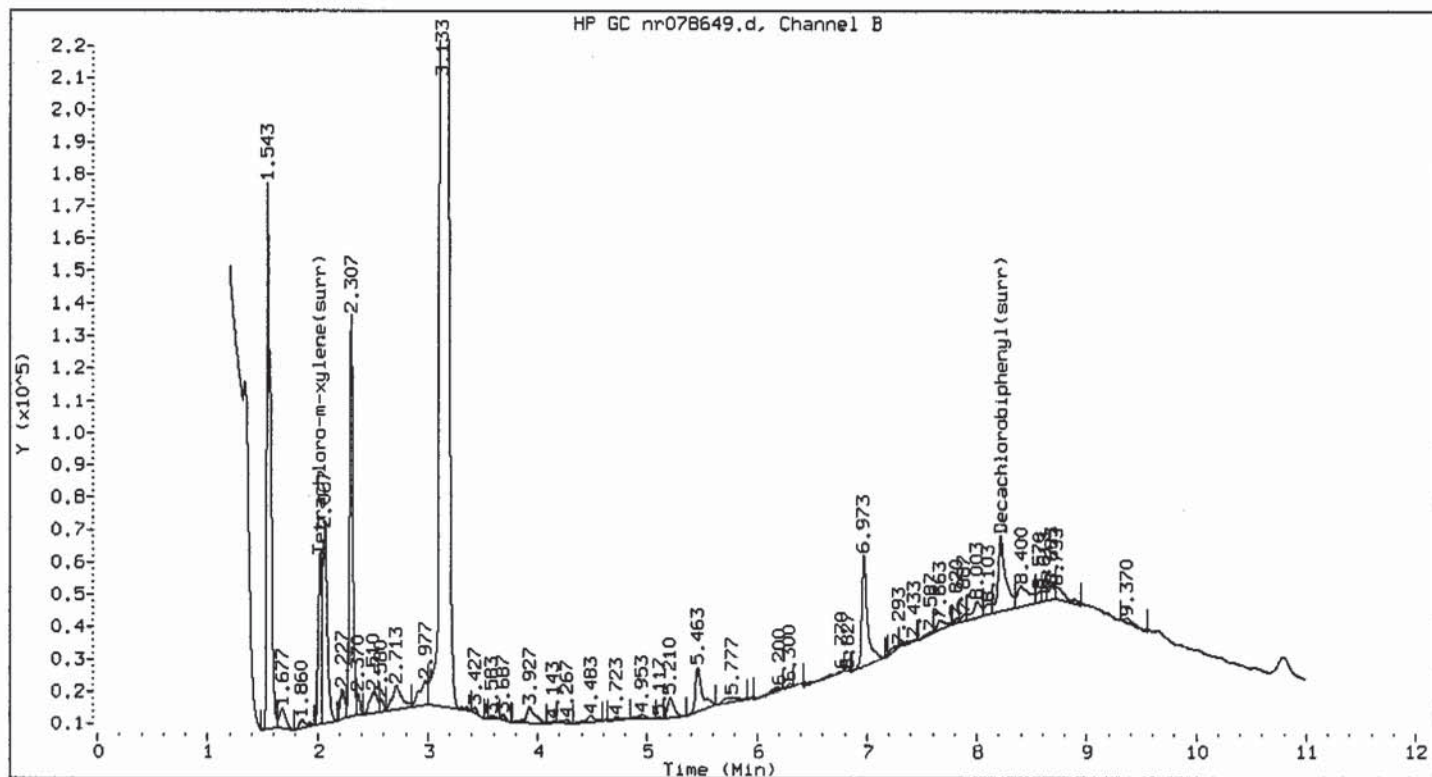


Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : 982650;4732213  
Lab ID : 982650  
Inj Date : 10-FEB-2009 17:18  
Operator : 171  
Cpnd Sublist: PCB+  
Inst ID : PESTGC6.i  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Tetrachloro-m-xylene(surr)	(M) 2.023	2.027	0.003	170195	61.398	0.310
Decachlorobiphenyl(surr)	8.217	8.217	0.000	126266	32.790	0.166

COMMENTS:

M - Compound response manually integrated.



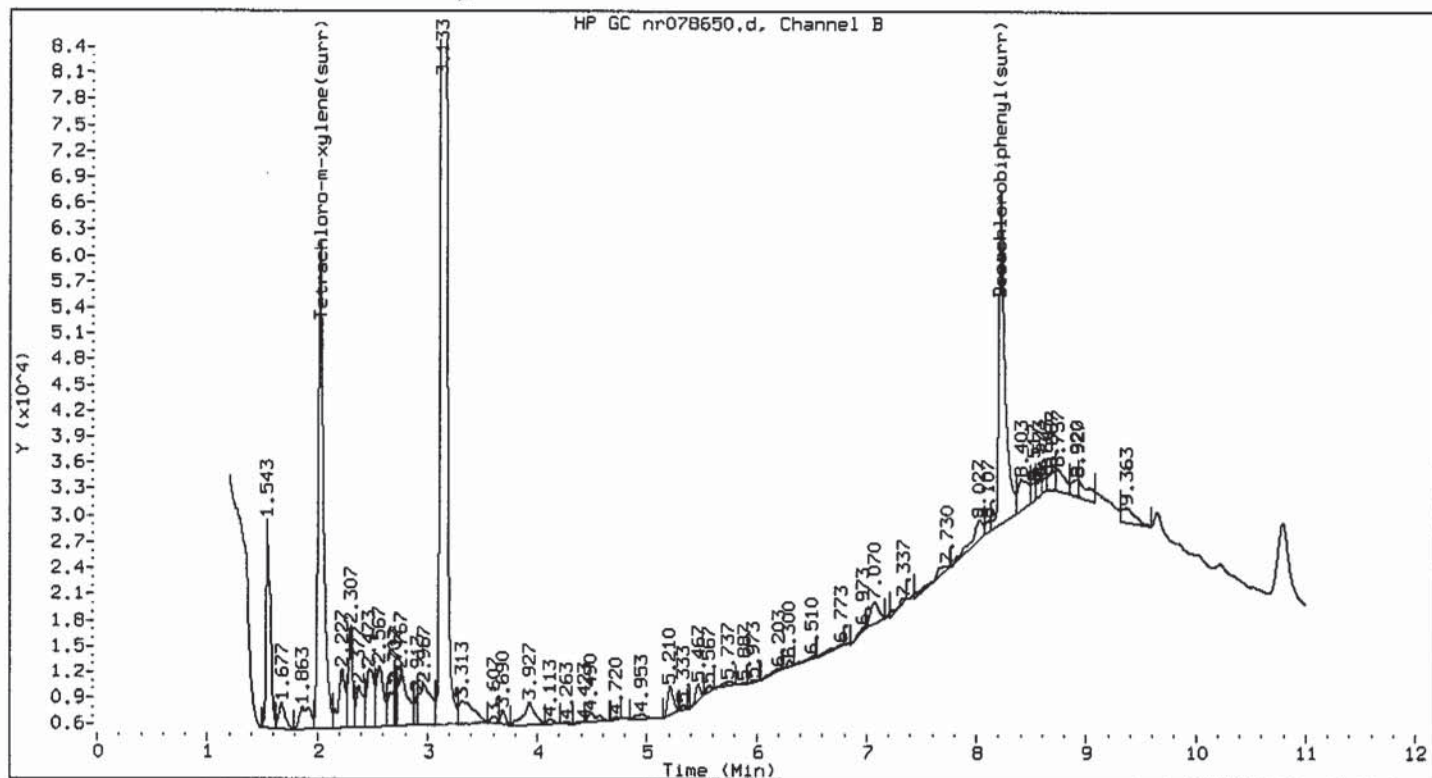
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 Sample Info : 982651;4732214  
 Lab ID : 982651  
 Inj Date : 10-FEB-2009 17:31  
 Operator : 171  
 Cpnd Sublist: PCB+  
 Inst ID : PESTGC6.i  
 Dil Factor : 1  
 Sample Matrix : WATER  
 Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Tetrachloro-m-xylene(surr) (M)	2.023	2.027	0.003	116515	42.033	0.212
Decachlorobiphenyl(surr)	8.217	8.217	0.000	110777	28.691	0.145

COMMENTS:

M - Compound response manually integrated.

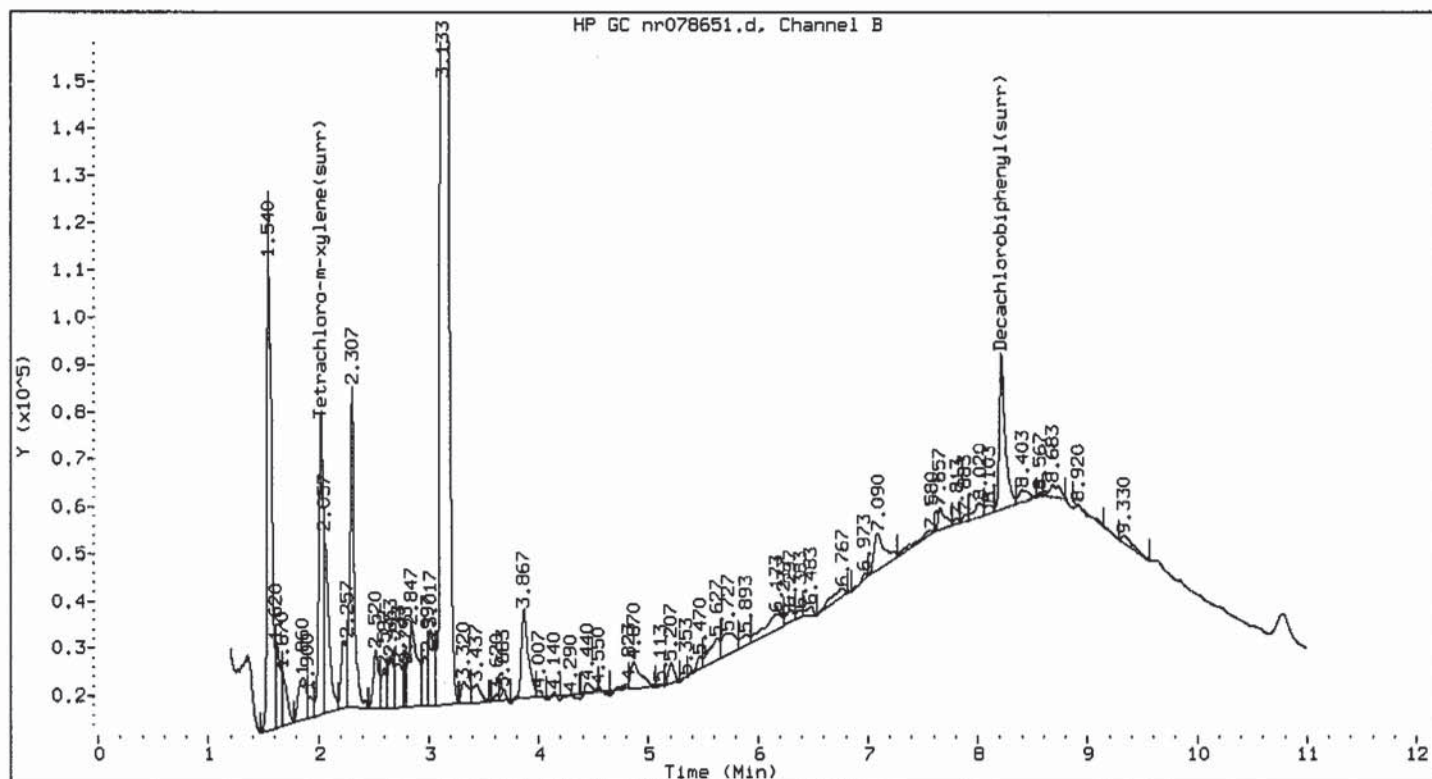
*SA*



Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : 982652;4732215  
Lab ID : 982652  
Inj Date : 10-FEB-2009 17:44  
Operator : 171  
Cpnd Sublist: PCB+  
Inst ID : PESTGC6.i  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Tetrachloro-m-xylene(surr)	2.023	2.027	0.003	190434	68.699	0.347
Decachlorobiphenyl(surr)	8.213	8.217	0.003	147585	38.459	0.194





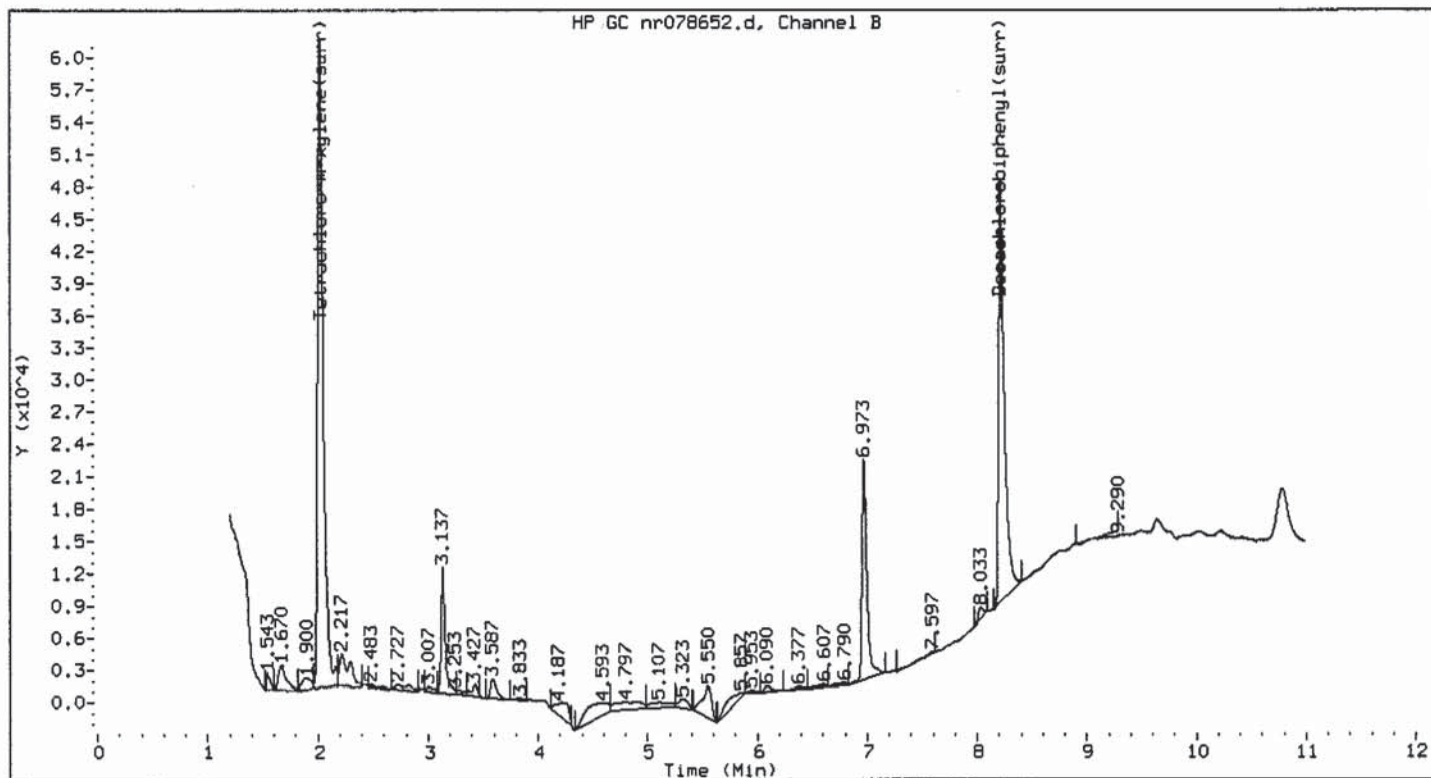
Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
Sample Info : 982653;4732216  
Lab ID : 982653  
Inj Date : 10-FEB-2009 17:56  
Operator : 171  
Cpnd Sublist: PCB+

Inst ID : PESTGC6.i  
Dil Factor : 1  
Sample Matrix : WATER  
Sample Type: SAMPLE

Compounds		RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
						ON-COLUMN	FINAL
						(ug/L)	(ug/L)
Tetrachloro-m-xylene(surr)	(M)	2.023	2.027	0.003	186332	67.219	0.339
Decachlorobiphenyl(surr)		8.213	8.217	0.003	121559	31.542	0.159

COMMENTS:

M - Compound response manually integrated.



Method : /chem1/PESTGC6.i/608/rear/Feb09/02-10-09ical/10feb09a.b/08Nr608.m  
 Sample Info : 982654;4732217  
 Lab ID : 982654  
 Inj Date : 10-FEB-2009 18:09  
 Operator : 171  
 Cpnd Sublist: PCB+  
 Inst ID : PESTGC6.i  
 Dil Factor : 1  
 Sample Matrix : WATER  
 Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/L)	FINAL (ug/L)
Tetrachloro-m-xylene(surr)	2.023	2.027	0.003	214609	77.420	0.391
Decachlorobiphenyl(surr)	(M) 8.213	8.217	0.003	139284	36.248	0.183

COMMENTS:

M - Compound response manually integrated.

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